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ACCIDENTAL INOCULATION OF ACTINOMYCOSIS IN A HORSE.

BY PROFESSOR PERRONCITO, ROYAL VETERINARY SCHOOL, TURIN.

THE case I am about to relate will explain how Actinomycosis may infest animals through wounds or lacerations, and, consequently, mankind also. The history of the case, for which I am indebted to the courtesy of Dr. Joseph Perosino, is as follows.

In the early days of July, 1881, a saddle-horse, eight or nine years old, belonging to Marenco de Moriondo, Lieutenant in the Second Mountain Battery of Artillery, which manœuvred at Colle di Nava, in placing its left hind foot on a large stone, which it upset, received a wound on the stifle of that limb.

The wound so produced appeared as two incisions running in the direction of the muscular fibres, and about three centimetres apart; the derm and Malpighian reticular tissue being divided, and the muscular tissue between the two cuts contused.

The horse was bled by the Veterinary Surgeon of Pieve di Teco, where it had been immediately sent, and was placed in a building where cattle were kept. Dressings of camphor ointment were applied to the injury, but the muscular tissue which had been contused became gangrenous and had to be removed, when it was found that the wound, which comprised the internal third of the tibia, extended to the bone, but this did not appear to be injured.

In about forty days the wound had cicatrised, but the cicatrix was subcutaneously enlarged and hard—a condition which somewhat disfigured the limb. Dr. Salvetti, of Caluso, examined the seat of injury about this time, and he recommended that the actual cautery should be applied to the tumour in three points. This operation,

however, did not produce any sensible diminution in the size of the part.

All special treatment having been abandoned, the horse did service during the winter and spring of 1882. At the commencement of the summer of that year, the animal again went to the mountains, and about August the enlargement or tumour was observed to be much increased in size, though this development had taken place slowly. The owner of the horse then had a vesicant applied to the swelling, and last September, as it had become more voluminous, it was treated with biniodide of mercury ointment, but without any beneficial result. At the end of October, Lieutenant Moriondo being in garrison at Veneria Reale, and noticing that the tumour looked like a large abscess arrived at maturity, requested Captain Veterinary-Surgeon C. Ceva to open it. The latter consented to do so, notwithstanding his great doubt as to suppuration having taken place. The horse was cast for operation on November 4th, and Captain Ceva being thus enabled to examine it, found it to be a *hot tumour*, and consequently concluded that it was necessary to remove, instead of evacuating it. It was therefore extirpated by enucleation, followed by cauterisation. The tumour had a wide base, was homogeneous in consistence, and a little denser than ordinary muscular tissue. It crepitated on section, and a very small quantity of albuminous fluid escaped from its parenchyma. Its naked-eye appearance was that of a muscle cut transversely; its colour was yellowish, with what looked like fat granules in the meshes.

Ceva thought it might be sarcomatous, and while informing the owner of the horse that the tumour would probably recur, he advised him to send it to me for histological examination, in order to be assured if it was really a Sarcoma.

A microscopic inspection of the growth revealed the presence of a considerable number of beds of actinomyces, and this impelled me to advise the immediate and thorough removal of the remains of the neoplasm, even the surface of the bone, if this were involved.

In November Captain Ceva and Dr. Perosino performed this operation, but discovering that the bone was seriously affected, they recommended the owner to have the horse destroyed.

This case demonstrates the possibility of inoculation of the antinomyces from any mechanical cause, and the production of very grave local lesions, with danger of diffusion of Actinomycosis, from the successive development and multiplication of the fungus.

MEAT INSPECTION AND BOVINE TUBERCULOSIS IN BOSTON, U.S.A.*

BY ALEX., M.D.V. INSPECTOR FOR CITY OF BOSTON ABATTOIR.

MR. PRESIDENT and Gentlemen of the Massachusetts Veterinary Association :—

Permit me to present to you a short account of my experiences as Inspector at the Brighton Abattoir for the Board of Health of the City of Boston, since October 1st to April 1st.

In passing, I may say that the Abattoir Company is a corporation who rent sections of their premises to the butchers of Boston for slaughtering purposes. Previous to my appointment they had been accustomed to a simple mode of inspection, which consisted principally in an examination of the dressed meats. They were, therefore, unprepared for a careful, professional examination of the live animals, followed by further inspection during the process of dressing.

The course I have pursued has been to make a tour of the different yards every morning, to gain an idea of the character of the animals, marking such as look suspicious, so that they could be identified when dead.

At first I was regarded by the butchers with more or less, perhaps natural, suspicion ; especially when the carcase and viscera showed that anything was abnormal, and a desire was shown on my part that they should remain together.

In justice to the butchers, it must be said that now they do not intentionally buy diseased animals, or handle unclean or unwholesome flesh ; but, having them, they desire to lose as little as is possible.

The rest of my time has been spent in walking through the different houses, observing the animals while being dressed, and, afterwards, should any part of the viscera be accidentally or intentionally disposed of, still another examination is made of the offal, when, should anything of a diseased character be found, the carcase to which it belonged is immediately hunted up ; *e.g.*, I have sometimes found in the rendering house lungs in an advanced stage of Chronic Tuberculosis, with abscesses, cheesy matter, grapes, etc. It then becomes my duty to find the animal from which they came. Having examined every carcase, and found one with a number of small grapes (tuberculus nodules) on the costal and diaphragmatic pleuræ, which had not been removed, and finding no other carcase having such lesions, one should feel justified in condemning this, even if it looked and weighed well.

* Read at a Meeting of the Massachusetts Veterinary Association on June 25th.

During the above time there have been killed 15,506 cattle, and a number of calves and sheep, among which there have been 880 cows. Of the above, there have been condemned 10 cattle, 31 calves and 5 sheep. Of course, the above does not include animals arriving dead, of which sheep amount to a large number.

Among the above condemned animals (the larger ones) have been found the following diseases, which I shall take the liberty to describe.

Tuberculosis	Five (5) cases.
Perinephretic Abscess	One (1)
Pylo-Phlebitis	One (1)
Anthrax	Two (2)
Texas Fever	One (1)

In addition to these, I shall also describe a few cases of *Actinomycosis*, of which there have been found seven (7).

This lesion, as was at one time thought, is not confined to the facial region, nor is it necessary as an accompanying lesion.

Of the three (3) cases with lesions found elsewhere than in the face, one (1) was in the tongue, and two (2) in the lungs, one of which was confined to the lung alone.

(*a*) That having lesions in the tongue, on running one's fingers down the lateral surface of the tongue it felt distinctly nodular, though not apparent to the eye; on cutting into these nodules, they were found to be made of small centres of yellow, granular matter, covered with fibrous tissue, and the characteristic radiating fungoid growth was fully demonstrated in the usual way.

(*b*) This case presented a small tumour in the left superior maxilla, consisting of small points filled with yellow matter. An examination of the lungs was made, and the left was found to contain numerous large abscesses, confined to one lobe, giving it a honeycomb appearance, the spaces being filled with yellowish puriform matter; this matter was of a white, viscid, quite tenacious kind, and the fungoid growth was found in both the pulmonary and facial lesions. This case was interesting from the fact that it might have been taken for a case of Tuberculosis, when it has gone on to the formation of large abscesses, and it would be sure to mislead one not competent to make a microscopic examination.

(*c*) No facial lesions were found in this case, but in one lung there was a dense nodule made up mostly of fat, in the centre of which was a calcified mass of the fungoid growth; it had a contracted appearance, and was, in all probability, an arrested stage of the disease, in which calcification had set in. This, perhaps, may be looked upon as being an unusual result of the disease under consideration; but in this instance, at any rate, the diagnosis is as certain as this form of termination is rare.

Second on the list of diseases is

Pylo-Phlebitis.—This is quite a frequent trouble, all but two cases consisting of a few small abscesses, in which case simply the liver has been condemned.

The following is a description of the above-mentioned two cases.

(*a*) The liver contained a large abscess, which worked its way forward through the diaphragm and into the right lung, resembling a thick walled tube, having a large abscess on either end, dumb-bell shape, the spheres of which were lodged in the lung on one end, and the liver on the other; microscopic examination of the pus showed nothing but simply micrococci.

(*b*) This case was what might be called General Purulent Pylo-Phlebitis. The liver was much enlarged, weighing twenty-six pounds, and one mass of miliary abscesses; rest of organs all normal; animal was quite emaciated, weighing only 430 pounds. The above was condemned.

Third on list of diseases is

Texas Fever.—Three cases of this disease have arrived on the grounds, two of which were dead, and at once sent to the dead-house.

Third case was that of an animal which had been shot at the Watertown Stock Yards, and carted into the slaughter-house to be dressed. There was a question in my mind whether the animal was not dead, or almost so, before it was shot. On cutting down the median line of the abdomen, the omentum covering the rumen was exposed; it was of a dirty gray colour, and smelling badly, arousing my suspicions at once. The liver was secure, which was enlarged and yellowish; spleen appeared normal. Feeling justified in my diagnosis, the animal was condemned, and ordered to be at once sent to the dead-house. The small number of cases of this disease is probably to be accounted for from the fact, that the season was that in which Texas Fever is not prevalent.

Fourth on list of diseases is

Anthrax.—Five cases of this most dreaded disease have arrived on the grounds, three of which had died, and two have been shot at the stock yards and brought here with the intention of dressing for meat. The first of these I will describe. An order came for the abattoir ambulance to go to Watertown for a steer which had been shot; it was ordered to be sent into one of the houses. Knowing nothing of the case previously, I reached the house as they were cutting down through the median line of the abdomen, exposing the omentum to view, which was almost black in colour, and had a very disagreeable gaseous odour, putrefaction having already set in, although the animal was supposed to have

been dead less than half an hour. My suspicions were at once aroused. From the rapid decomposition, and my having had three cases two weeks previously, I was somewhat on my guard for Anthrax, and after further convincing myself, I ordered the animal to be sent to the dead-house. The floors were then cleaned and necessary precautions taken before dressing any more on the same spot. On post-mortem examination, no marked lesions of an anthracoid nature were found; although in this form, which I take to have been the apoplectic, one would not expect to find any very marked lesions. However, feeling sure of my diagnosis, scrapings were taken from the spleen and examined microscopically for the Bacillus Anthracis, with positive results, the rods having begun to form spores from exposure to the air. This left no doubt as to the diagnosis. This carcase was ordered, along with the hide, to be at once placed in a closed rendering tank, and subjected to a prolonged cooking under a pressure of 50lbs. steam, which means a temperature of about 300° F.

Fifth and last on list of diseases is

Tuberculosis.—The detection and detention of such cases of Tuberculosis as would seem unfit for consumption, has been a part of my work in which I have taken much interest, and rigidly examined all cows slaughtered here, as the disease is most prevalent among them. Up to date April 1st, twenty-nine cases have been discovered, showing lesions all the way from a mere nodule to the most advanced stage. Twenty-eight of the above number were cows, the twenty-ninth being a northern ox; of these, five only have been condemned. This means that these five had considerable thoracic, and in some cases abdominal lesions.

On account of the differences of opinion as to the danger of contracting the disease from eating the flesh of those killed during its early stage, and when they have shown only trifling lesions, I have condemned only such as seem to be the worst.

Perhaps it had better be said here, that the surrounding towns have no system of inspection.

Although my examinations show a considerable percentage of Tuberculosis among our eastern cows coming here, I am convinced that the disease does not prevail to anything like the extent that some of our members have reported, and possibly honestly suspect.

Below are a few statistics gathered at the abattoir.

There have arrived 880 cows, of which seventy were western, leaving 810 eastern. Of these 880, twenty-eight were found to have lesions of Tuberculosis; of the seventy western cows not one case was found. The percentage will read as follows:

Number of animals (cows and steers) killed, 15,506.	
Percentage of Tuberculosis	0.17
Of the 880 cows, Eastern and Western	3.30
„ „ 810 „ Eastern only	3.60
„ „ 70 „ Western only	0.00

Of the twenty-nine cases discovered, there was not one among them but showed some pulmonary lesion. I do not wish to be understood as thinking there is no such thing as localised Tuberculosis—this has been demonstrated by inoculation; but from my experience, it would seem that invasion most frequently takes place through the respiratory passage.

Of course, we must take into consideration that the cows coming here are generally thought to be sound; that is, we do not get all the animals used in the cheaper grades of beef. Thus, it will be seen that the above statistics are not the actual statistics of the State; still I think them a fair average of abattoir statistics. An acquaintance with the subject of inspection, as reported in the current professional journals of the day, will convince any one unprejudiced that we are better off than any European country reported; that is, the percentage of Tuberculosis among our animals is less than in any European country. The number of animals killed outside the abattoir can only be a very small number compared with the other, and it would be unfair to think that all such are diseased, or even one-fourth of them.

So far as can be judged from my short period of inspection, even among our eastern cattle, Tuberculosis exists to a much less extent than among animals in the populous centres of most European countries; and among our western bullocks Tuberculosis has almost no existence whatever, and this class of animals represents two-thirds of our cattle population.

I may add in connection with the foregoing, that in connection with the abattoir we have an establishment where fertilizers are manufactured and dead animals of all kinds received, such as horses and cattle, many of which are cows. These animals represent a fair average of the cows of our neighbourhood; having died, the owners have seldom any disposition to hide them. I have examined all the cattle brought here, and so far my record is as follows:

Received dead cows at abattoir, from October 1st, 1889, till April 1st, 1890..	80
Number found with Tuberculous lesions	6
Percentage	7.5

No better opportunity, it seems to me, could be found to reach a fair average of the extent to which the disease prevails among our animals.

A REMARKABLE NECROPSY.

BY J. MOIR, M.R.C.V.S., ARMAGH, IRELAND.

On September 26th, I was desired to make a *post-mortem* examination of a cow which, prior to death, as far as I could gather, had repeatedly changed hands, and for several months had exhibited symptoms of lung disease.

On opening the abdomen in order to remove the digestive organs, I found, to the right of the œsophageal orifice, a large circular in the diaphragm, and through it, protruding into the chest, a portion of the reticulum, about the size of a child's head. At the anterior extremity or bulge into the thorax was a ring-like aperture, with the dimensions of a crown-piece, which led into a large cyst, or what might be termed a "food chamber," in the substance of the right lung; this cavity contained about seven pounds of food, which was pulpy in consistence, and apparently recently ingested.

In the herniated portion of the second compartment of the stomach was a mass of infiltrated *débris* in the form of small stones, pieces of nails and iron wire, mixed in food which rather resembled rotted dung, which formed a marked and rather unaccountable contrast to the food found in the lung cyst. In the lungs were several cysts containing pus.

In conclusion, I may say that I am unable to offer an opinion as to how the food circulated or did not circulate through those chambers, any more than as to the cause or causes which led to this remarkable pathological condition.

GENERAL REMARKS ON SKIN DISEASES.*

TRANSLATED BY R. W. BURKE, F.R.C.V.S., VETERINARY DEPARTMENT, CORRESPONDING MEMBER OF THE ITALIAN VETERINARY ACADEMY.

Skin diseases appear in all domestic animals, but especially in the dog, horse, sheep, cattle, swine, goat, cat, and poultry. In these animals skin diseases are very common, and occur in many forms. Owing to this diversity of forms, they have from the first been described under similar names to morbid conditions of the human skin; but this has not always been correct. It would be advisable to drop all old-fashioned terms of questionable value, and endeavour to classify them more under legitimate headings.

A correct classification of skin diseases in the lower animals, as compared with those of man, is much more difficult, owing to the presence of pigmentation and hair on the skin of the former.

* *Lehrbuch der speciellen Pathologie u. Therapie der Hausthiere*, Von Frohner u. Friedberger.

The anatomical changes are not so easily discerned in consequence of this; and the different degrees of pigmentation of the skin observed in different animals has led the same disease to be mistaken for various diseases in different cases. While diseases of the skin are usually divided into parasitic and non-parasitic forms, it is evident that, owing to external lesions of the skin, the non-parasitic may often become parasitic in character. Skin diseases, the result of micro-organisms, may also originate in healthy skin.

Skin diseases may be considered under parasitic and non-parasitic headings, and the parasitic under those due to vegetable and animal parasites. The largest number of skin diseases originates from constitutional causes: *example*, Pox, Foot-and mouth Disease, etc. These may be considered as idiopathic diseases, known as Exanthems (*i.e.*, eruptions due to internal causes.) They may be also classified under infectious skin diseases. On the other hand, there are many skin affections which surely must be dealt with more by the surgeon, such as Erysipelas, Phlegmon, Panaritium, and new formations of skin, etc.

Non-Parasitic Skin Diseases.

Inflammation of the Skin, or Dermatitis Erythematosa.

The simplest form of skin disease consists in hyperæmia of the papillæ of the skin and epidermis, which is known as Inflammation of the skin, and is diffused as well as circumscribed in patches (roseola). This disease can be distinguished only in animals which do not possess pigmented skin. It may be seen chiefly in dogs, pigs, sheep, and grey and piebald horses. The only symptom of Erythema is redness of the skin, which, on pressure, becomes pale. On the contrary, in hæmorrhages (such as petechiæ, ecchymoses, and purpura) pressure will not remove the colour. There is also present sometimes, an itching in Inflammation of the skin. When the disease has been of a longer duration, the epidermis becomes corrugated.

Etiology.—Inflammation of the skin may be either an independent condition, or it may be the precursor of other disease. When it is a disease *per se*, it subsides without leaving any structural change of the skin. The causes, then, are—

(1) Mechanical friction of the skin, pressure, rubbing, clipping, driving of animals in large herds (*erythema traumaticum*).

(2) Chemical irritation, such as results from the application of carbolic, tar, cantharides, ointments, sinapisms, urine, etc. (*erythema toxicum*).

(3) The action of varying temperatures, such as the sun beating on less pigmented parts (*erythema caloricum et solare*).

Treatment.—When the inflammation is accompanied by prurigo, sugar of lead lotion should be used; or a powder of oxide of zinc and starch; or lead and zinc ointment. If the itching is very severe, a six per cent. caustic lotion.

When the disease is prolonged, an inflammatory infiltration of the cutis results, with vesicular, bullous, phlegmonous, erysipelatous or gangrenous Dermatitis. The distinction between hyperæmia of the skin and inflammation cannot always be determined.

Circumscribed Inflammation of the skin of parts of the body which come in contact with the pollen of certain grasses, when horses are worked in the fields, is very commonly noticed, especially about the less pigmented parts of the skin, and is aggravated by the action of the sun, and is also produced by the animals eating pollen-containing grass. Often, also, small insects adhering to the pollen enter the skin, causing great irritation.

This disease is mostly found in grey and piebald horses, spotted sheep, and particularly lambs; also in pigs, and less frequently in goats (Hering) and cattle. Animals fed on the pollen-containing grass sufter from this form of Inflammation of the skin in the course of eight or ten days, sometimes later, on exposure to the sun.

When there is only inflammatory reddening, the disease is called Erythema; when inflammatory swelling of the head (chiefly of the ears, face, etc.), it is called *Dermatitis erythematosa*, in which there is marked itching and more or less inflammation of the brain. Frequently blisters appear, which, when they burst, give rise to a yellowish discharge (*Erysipelas bullosum*). In more severe cases, there is disorder of respiration, with inflammation of the mucous membrane lining the trachea, accompanied also with fever and brain symptoms, shown by deafness and stupidity, cramps, acute convulsions, etc.

Rabe and others have analysed the pollen, and found it to contain a narcotic poison.

The treatment should be chiefly preventive, animals being carefully housed. Wnen the disease has already appeared, the animals should be kept in some shady place. In complicated cases, when erysipelatous inflammation of the head has set in, cooling applications of lead lotion, etc., may be used.

Eczema.

The best definition of Eczema is that it is a simple inflammatory affection of the skin, which may terminate in more advanced forms of disease. An Eczema may appear not only on the skin, but also on other structures, as mucous membranes, which may be considered a catarrh, in fact. But it is known under various names, depending

on its stage—as serous, mucous, and purulent, etc., all being different varieties of the same disease. The difference in the outward appearances of the different Eczemas has led to the mistake of confounding different stages of the same as being distinct affections. It is quite explicable that the disease may, in different animals, present quite different appearances; although it is one and the same disease, the different habits of the animals, their different constitutions, etc., will make the same disease appear under varied forms. And this is the principal reason why so much confusion prevails with regard to this simple skin disease; and on this fact there should be a clear understanding, to prevent further confusion.

As in simple inflammation, so in Eczema, the disease has to go through various stages; and, as in Eczema of the human subject, it is divisible into six stages:—

(1) *Erythematous*, or *squamous stage*, which consists in hyperæmia of the skin, with a surface exudation. The epidermis is thickened and cracks in small patches. When seen in this stage it is called *Eczema squamosum*. Most frequently this squamous Eczema comes on towards the latter stages of the disease. It is then known under various names, as Psoriasis, Pityriasis, etc., which are distinct.

(2) *Stadium papulosum*. This form manifests itself as so many small, red eruptions which, examined microscopically, show a small-celled infiltration, with serous channels through the papillæ, which are swollen. This is the stage called Eczema papulosum, which is known under the common name of "heat-eruptions."

(3) *Stadium vesiculosum* follows the aforementioned forms, when the serous infiltration of the papillæ of the skin becomes in excess, and rupture takes place, the liquid forcing itself into the stratum corneum. This form of vesicular Eczema appears chiefly in "Typhus Eczema," and is then called, though incorrectly, *Eczema simplex*. This form of Eczema has no connection, however, with the herpes of the human subject.

(4) *Stadium madidans*, or the discharging stage, which develops after the spontaneous or artificial rupture of the blisters, when it constitutes the *Eczema rubrum*. This kind of Eczema appears mostly in dogs.

(5) *Stadium pustulosum* or *impetiginosum*, is the result of purulent conversion of the contents of the vesicles, producing pustular vesicles, in which there is a tendency to spread to contiguous parts. Is seen chiefly in dogs and horses. It is called *Eczema pustulosum*.

(6) *Stadium crustosum*, in which there is drying up of the exudate, whether in the case of vesicles, or in the pustules, or on the wet skin-surface, and it is called *Eczema crustosum*.

The various headings show the many forms Eczema may assume. The disease may pass from the first stage rapidly into the last. In

pigmented and hairy animals in particular, the passage from one to another stage is especially rapid, as, for example, the conversion of the papular into the vesicular stage.

We may consider the different forms of Eczema in the different domestic animals *seriatim.*

(*To be continued.*)

FRACTURE OF THE PEDAL BONE.

BY J. FREEMAN, M.R.C.V.S., HULL.

THE recording of the following case may be of interest to some of the readers of the VETERINARY JOURNAL, as after meeting with several forms of fracture of the pedal bone, this one appears to me a rare specimen. The subject was a bay horse nine years old, used for railway shunting. On August 7th he was found to be intensely lame of the near hind limb, and after inquiries there was no evidence bearing on the cause, as is often the case, and at times this comes to light when least expected.

I was called in consultation on September 2nd, and found him suffering acute pain, with great swelling around the coronet; the foot was examined thoroughly, and the diagnosis was fracture of the pedal bone, and immediate slaughter was recommended. However, that was not carried out, and he died on September 22nd.

The *post-mortem* inspection revealed a complete fracture of nearly the whole of the articulating surface and the left wing of the pedal bone, as shown in the accompanying plate.

STRANGLES (FEBRA-PYOGENICA) IN THE MARE, WITH TRANSMISSION TO THE FOAL.

BY FREDERICK C. MAHON, M.R.C.V.S., CROMER, NORFOLK.

In the September number of the VETERINARY JOURNAL for 1888 (pp. 182, 183), is recorded a case of transmission of this disease from the mare to the fœtus.

Having in Tuberculosis of the cow witnessed several interesting cases of transmission, in not only aborted young and in those prematurely born, but its transmission to calves aged five and nine days respectively, and which succumbed rapidly, as well as in a case in which death of the mother took place, and extensive degenerative changes existed in the uterus, placenta, and cotyledonary bodies, I am induced to record comparative transmissions in a class of animal which country practice afford but few opportunities of witnessing, when compared to that in large cities, where defective hygiene and combined miasmatic influences induce death more frequently, and where are witnessed severe cases of contagious or specific eruptive fevers.

I have only recently seen a case of transmitted Strangles in the mare to the progeny, and it being one of interest, induces my recording notes of a few particulars of it, which bear out *in toto* M. Martin's observations, together with inoculatory attempts with the virus of Febra-Pyogenica.

M. Martin, in an "Etude sur la pyogenie specifique appelée gourme du cheval (Bayeux, 1887)," has stated that when a mare foals within fifteen days, the young creature will have the disease of which its mother appeared to be cured when it was born.

This virulent heredity is very frequently fatal to the foal, which dies exhausted by the abscesses that multiply in all parts of the body. But Nocard remarks that Choisy's case (to which he referred) was incomplete, as the lesions, besides their special characters, were all internal.

At a recent meeting of the Société Central de Médecine Vétérinaire of Paris, it was stated that M. Choisy, Veterinary Surgeon to the 10th Cuirassiers, had sent to the Society the organs of a foal which died within a few minutes after birth. The lungs and small intestines and their lymphatic glands were the seat of numerous lesions, apparently neoplastic, the nature of which a microscopic examination could not decide. The mother of the foal had been affected with Strangles during the period of gestation.

The anatomical observations of M. Malvoz have convinced him that in a condition of integrity, the placenta, like the kidneys, is a perfect filter. But in the majority of infectious maladies, the accumulation of the microbes in these organs and their proliferation

in situ, will tend to produce rupture of blood-vessels, which breaks the perfect barrier formed by these organs, and thus opens the door for the micro-parasites into the fœtus when the placenta is involved.

But then it is by effraction, and not by filtration, that these parasites penetrate, and this circumstance is sufficient to explain the inconstancy of the phenomenon.

Fœtus, in the case I allude to, produced on *post-mortem* examination, briefly and broadly, the following pathological details :—

Lungs and small intestines and their lymphatic glands were the seat of numerous neoplastic growths. The mother of the fœtus had been affected with Strangles during the period of gestation—in fact, for a fortnight previous to foaling. The foal was extremely weak when born, so that it could not stand or suck ; the breathing was oppressed, and there was pallor of the visible mucous membranes. It died after twenty-two hours, gradually becoming weaker. No nourishment was taken.

I detected, during life, pericardial effusion and blood contamination (lung sounds); 4 ozs. of fluid of a serous nature, straw-coloured, escaped on puncture of *Pericardial Sac.*

Dr. Schutz has been experimenting with the virus of Strangles, which he designates a purulent Catarrh of the Schneiderian membrane, etc., and suppuration of the neighbouring glands ; and Metastatic Strangles, which is a specific pyæmia caused by infection of the blood, not by ordinary pyæmic cocci, but by streptococci of Strangles. As to the form of Strangles an animal will suffer from, this will depend upon the dose of the virus absorbed and vigour of the resistance offered by the protecting phagocytes.

That the placenta when involved by pathological changes inducing rupture of blood-vessels, and entrance thereby into the haemal stream, of infective particles from the empoisoned blood, admits of no doubt. It would be interesting to note whether in the experience of practitioners in whose practice cases of Influenza have occurred in all breeds of horses, and under varying circumstances, similar cases have occurred of transmission of the disease to the young during intra-uterine life, as has been Strangles, an allied affection in many of its phases of development and characteristics.

THE OPERATION OF ARYTÆNOIDECTOMY FOR ROARING.

On February 8th, 1889, two horses belonging to the Royal Artillery (Nos. 196 and 2,523, F Battery) were operated upon by Mr. Kaye Lees at Newbridge, Ireland. They were such bad roarers that they were declared useless. On May 9th of that year they were discharged for duty as "relieved," and soon after marched with their battery to Dublin. Subsequently, they marched from Liverpool to Woolwich, where they are now stationed. From Woolwich they marched during the hot weather in July, to Okehampton, in Devonshire, where the battery was sent for gun practice, returning again to Woolwich last August. On these long marches and while in camp the work was heavy and occasionally severe; yet the horses in question proved quite equal to the average Artillery horses, and maintained their condition equally well. A recent examination of them appears to have given satisfactory results. Continued pressure on the larynx for some seconds, preventing normal admission of air, when removed caused free dilatation of the nostrils, but there was no cough. Neither was there any noise in breathing, nor any abnormal movement of the flanks after a prolonged trotting of the horses with a rider on the back.

At an inspection a short time ago, the inspecting General asked whether these horses were any better than they were before being operated upon, when the officer commanding the battery said, "there was no comparison between the two conditions, as the horses were practically useless before the operation, whereas they had since afforded every proof of their utility."

Editorial.

DIPHTHERIA IN ANIMALS AND MANKIND.

Diphtheria is so prevalent in the human species, so terribly fatal, so little under medical or surgical control, so frequently followed by serious complications in those who recover, and generally so obscure in its origin, that it is regarded as one of those terrible pests of mankind which baffle the skill of physician, surgeon, and sanitarian. In the midst of the confessed perplexity which the obscurity shrouding the causation of the disease engenders in the mind, many vague surmises are thrown out and hypothesis promulgated to account for its origin, and in recent years attempts have been made to attribute it to diseased animals. Indeed, when every other source for a contagious or infectious malady has been found at fault, the fashion has been to fall back upon disease among one or more of the species of animals we have domesticated, and, if possible, to associate some indisposition in them with a serious outbreak of disease in the human species—no matter how dissimilar, pathologically and clinically, the indisposition and the disease may be. Enteric fever, Scarlatina, and Diphtheria, among others, have from time to time been ascribed to infection from animals, and with so much confidence and plausibility, that those who have made animal pathology a special study and the work of a lifetime, are oftentimes astounded at the temerity with which opinions and assertions are seriously published regarding maladies being transferred from animals to man, when no such affections or transmissions have been witnessed in these animals. It has become fashionable to look for outbreaks of Diphtheria to milk from diseased cows, or to contact with horses, cats, dogs, or fowls. In 1886, Dr. Turner, while investigating epidemics of this scourge in Hants and Herts, discovered that cats and fowls, as well as swine and horses, had been affected with a similar disease. Strangles in horses has even been supposed to produce Diphtheria in man, and sheep have likewise been blamed. In 1880, it was suggested, and indeed believed, that the affection was derived from cattle.

Now the question may be fairly asked, Do animals suffer naturally from Diphtheria, and if so, to what extent? The question should be answered, if possible; as upon the reply must depend, to a great extent, the kind of measures necessary to prevent the malady in our own species. If there is no foundation for the belief that Diphtheria may be due to the interposition of affected animals, then it should be known, so that those who desire to suppress it may not be misled.

Now with regard to horses, our experience among them would lead us to assert in the most positive manner that they are exempt from this disease. We have never seen a case in the horse; and so far as our researches go, there is not a case of genuine Diphtheria described in Veterinary literature—English or foreign; and certainly in the British Army, where diseases among the horses are most carefully observed, Diphtheria is unknown. Strangles is, unfortunately, a very common malady in every part of the world, but it is not communicable to man-

kind, and has no resemblance to Diphtheria. In the *British Medical Journal* for October 25th, is a paper which we publish elsewhere, from the pen of Dr. Davidson, on this disease in man and animals. During an outbreak at Buenos Ayres, he found that thirty-five per cent. of the people who died from the disorder lived in houses where horses were kept, or in houses immediately adjoining stables. And as will be seen from a perusal of his paper, he states that the mortality from Diphtheria in the principal European armies is much greater among the cavalry than the infantry. But he does not give a single instance of horses being affected with this or any other disease in Buenos Ayres; and though we cannot at this moment make any precise statement with regard to Continental armies, except that Diphtheria is, we believe, no more known among the horses in them than in our own army, we venture to dispute the suggestion that, if it is more prevalent in the cavalry than the infantry—this has anything to do with the horses. We fancy the statistics of our Army will not be found in harmony with the suggestion. From the knowledge we possess on the subject, we are of opinion that the horse enjoys immunity from the specific disease known as Diphtheria; and therefore, not having the malady, this animal cannot infect mankind.

With regard to cattle, some years ago we read a paper on this subject before the Epidemiological Society of London, in which we referred to cases occurring in calves of what resembled Diphtheria, and of attendants becoming affected with a similar disease. These instances were reported by Professor Dammam, of Hanover, in the third volume of the "Zeitschrift fur Thiermedicin;" but they were the first and last, and there are grave doubts as to whether the disease affecting the calves was Diphtheria.

We are not unmindful of the fact that Haubner, Spinola, Naczynski, and Zürn have imagined the specific catarrhal fever of horses and cattle (the *Bösartigen Katarrhalfieber*) sometimes seen on the Continent of Europe, to be a kind of diphtheritic affection, but we cannot find a case of transmission of this disease to man.

Dogs appear to be, like horses, exempt from Diphtheria; cats have suffered from it when people were affected, in all probability being infected from the latter. Fowls and pigeons suffer from a disease having, in some of its features, a resemblance to Diphtheria; but whether it is communicable to the human species we require more positive evidence before a definite conclusion can be arrived at.

It must be remembered that the disease appears where there are no animals, and that people who are among these all their lives do not suffer from it. In fact, there is not an instance, as far as is at present known, of animals transmitting this specific, and, it might be said, peculiarly human disease to mankind. We dare not venture to assert, with full confidence, that such an occurrence has not taken place, or that it may not happen; all that we can say at present is that it is most unlikely. But we would beg of our readers to assist in elucidating the mystery that hangs over the etiology of Diphtheria, by recording any observations they may have to make concerning its existence in animals.

THE ARMY VETERINARY SERVICE.*

BY GEORGE FLEMING, C.B., LL.D., F.R.C.V.S., LATE PRINCIPAL VETERINARY SURGEON TO THE FORCES.

It is now close upon a hundred years since the first veterinary school was established in this country, when the medicine and surgery of the domestic animals began to receive serious attention by competent persons, who taught those branches of the healing art to students in a systematic and intelligent manner.

This school—the Royal Veterinary College of London—was commenced under the auspices of a Hampshire Agricultural Society—the Odiham—and conducted under the management of a number of noblemen and gentlemen, as well as two or three surgeons and physicians, of whom the immortal John Hunter was the most active. The objects in view in instituting it were more especially the introduction of humane and scientific methods of treating the diseases and injuries of horses, cattle, and other animals, as well as the prevention of those serious outbreaks of incurable disorders which caused such appalling losses in the eighteenth century. Hitherto there had been no guarantee that the persons who were entrusted with these functions possessed any special fitness for their performance; and, indeed, except in a few instances, the farriers who undertook the cure of sick animals were unskilled and illiterate, and were more at home in the forge than the pharmacy or hospital stable. Now and again a fairly intelligent farrier appeared, who has left us evidence that his practice of medicine was at times more than empirical; while at rare intervals a surgeon devoted a portion, or even the whole of his attention, to animal diseases. And there were also amateurs who wrote books on the subject, which, if very poor productions in our estimation, yet must have done some good in promoting a desire for increased knowledge.

It may be asserted that in our army, the horses of the artillery and cavalry were in the hands and at the mercy of the farrier, for shoeing and doctoring; and perhaps when diseases were more than usually fatal or prevalent, the surgeon lent his aid in increasing the mortality or diffusing the contagion. Until the school I have just mentioned was founded, veterinary medicine and surgery, as they are now known, did not exist, and of course there were no veterinary surgeons; the commencement of the school and the introduction of the term "veterinary" being coincident.

But England was not the first country to benefit by the inauguration of a new era in animal medicine. On the continent of Europe, previous to the middle of the last century, the state of affairs alluded to was much the same as with ourselves before 1792. In France there was the *maréchal-ferrant*, who was at the same time the shoer and the doctor of equines, and who was probably no more qualified to act intelligently or beneficially than his *confrère* on this side of the Channel. True, in that country, as in this, there were amateurs; some of them, to judge by their writings, were very learned, observant, and experienced men, who did much to improve what was designated "the art of farriery." These were the descendants of the *écuyers* of the Middle Ages, and who, from being Masters of the Horse, by their study of the disorders of that animal, in time received the title of *écuyers-vétérinaires*. Italy had at a still earlier period made a great advance in this direction; and, in fact, the veterinary knowledge of the Greeks and Romans had been carefully preserved by the Italians, and added to by those who made horse management and equitation a special study in that country. Cavalry formed the chief portion of European armies for many centuries, and the Italians

* From the *United Service Magazine* for October.

devoted themselves in a thorough manner to training and riding horses for war. Their cavalry schools are great establishments instituted for that purpose, and in these, in addition, veterinary medicine was taught. The cavalry school at Naples was long celebrated for its equitation and horse management, and it supplied riding-masters (who were designated "mariscalcus," while their profession was known as "marescalcia") to all the European courts. It is recorded that Henry VIII. brought over two of these men, who had been trained by Grisone, a famous teacher in the Neapolitan school. Spain had also her "albeytares" and "herradores," as these persons were named in that country; and Germany was not behind in patronising these masters of equitation and horse management, so essential in times when all that pertained to the horse played such an important part in evolving the destinies of nations. But it had long been manifest that the knowledge respecting its diseases was insufficient to guard against most destructive outbreaks, which at times paralysed the movements of armies for many centuries preceding the eighteenth; but which were more marked in that century, perhaps, than in any other. Mention is frequently made of the heavy losses among horses in the wars then so often repeated and long continued, especially those occurring in the Rhine Provinces.

These losses showed the urgent need of something being done to place veterinary on a similar footing to human medicine, and France took the initiative in this movement. Buffon, the great naturalist, had recommended the establishment of veterinary schools in that country; but his recommendations were not attended to, and it was reserved for the illustrious Bourgelat, an advocate of Lyons, and evidently a very talented "hippologist," through his influence with the sagacious Bertin, Prime Minister under Louis XV., to induce the Government to open a veterinary school and school of equitation in that city in 1761. To the former excellent teachers were appointed, and Bourgelat undertook its direction and a leading part in tuition. So highly successful was this institution, and so much had it realised the anticipations of the prescient Bertin, that it was determined to extend this teaching to other parts of France. Consequently, Bourgelat was sent to Paris, where he founded the Alfort Veterinary School, and in the course of time another Government school was instituted at Toulouse.

The creation of these French veterinary schools, and the brilliant success which attended their teaching, was an event in Europe, and excited much attention among all Governments except our own. Soon after the Alfort School was inaugurated under such favourable auspices, a national school was established at Vienna in 1767, by order of Maria Theresa, and which, remodelled by Joseph IV., is now among the largest on the Continent. In 1768, the distinguished Cothenius, physician to Frederick the Great of Prussia, brought before the Berlin Academy of Sciences a project for the establishment of a veterinary school in that city. The idea seems to have originated with the King himself, but his physician was the prime mover in founding the school, this taking place exactly a century ago. It is to be observed that these Prussian and Austrian schools were instituted for the purpose of training veterinary surgeons for the army, and were placed under the direction of the War Ministers; and so they are to this day essentially military, the teaching of civilians being a secondary object. The French schools were, and are now, chiefly devoted to the production of army veterinary surgeons; though they are, like all the schools which were created by the Governments of other countries quickly afterwards, under the control of the Minister of Agriculture. With the creation of these schools, the medical and surgical treatment of horses, and also of cattle and other animals, soon became a special and serious study, and almost the first to benefit therefrom were the army horses—veterinary graduates being posted to regiments

and corps, in which they were given a recognised position as professional men.

In this country the State has done little for the advancement of veterinary science. English-speaking countries have, it may be said, done nothing for its promotion or encouragement, notwithstanding their possession of the finest horses and cattle in the world; and the three schools which were established in Scotland after that in London, and which now exist, are to all intents and purposes private ventures. This neglect has proved a serious obstacle to the improvement of veterinary education and the elevation of veterinary practitioners in the social scale; while it has greatly limited the benefits which the country would have derived from a generous recognition of this important branch of medicine.

Not long after the foundation of the London school, it was suggested that the best of its graduates should be induced to enter the army, and the terms offered were somewhat liberal. In an old magazine published in 1796, appears the following paragraph: "Veterinary surgeons for the cavalry. It is intended by Government to attach a veterinary surgeon to each regiment of cavalry, and as an inducement for medical gentlemen to pursue the veterinary art, it is liberally proposed to make them commissioned officers, and to give them seven shillings per diem; and in order to prevent any but properly qualified veterinary surgeons from receiving these appointments, no pupil from the Veterinary College can be engaged for the army without obtaining a diploma signed by the medical committee and the professor." In a few years all the regiments appear to have been so provided, and Professor Coleman, Principal of the College, was appointed Principal Veterinary Surgeon to the British Cavalry—an office which he filled with the most laudable fidelity, and with such advantage to the country that many horses were saved. So marked was the improvement in the state of the cavalry horses, that George III. gave his patronage to the Veterinary College; and Coleman, in dedicating his work on "The Foot of the Horse" to His Majesty, says, "By conferring on the veterinary surgeons employed in the cavalry the rank of commissioned officer, Your Majesty has done more to promote the veterinary art than otherwise could have been effected in centuries. This single act has not only raised the art from contempt to respectability, but already induced many medical students of liberal education to devote their services to its improvement. . . . Most of the regiments of regular cavalry in England have been supplied with veterinary surgeons, and I believe that there is no regiment in His Majesty's service, which has had an opportunity of seeing the veterinary practice, as opposed to the former system, who would not feel a pleasure in bearing testimony to the advantages which Government has already derived from their appointment."

Veterinary officers accompanied the cavalry regiments, the artillery, and the waggon-train, during the wars in the early part of this century, and did much to diminish losses and maintain efficiency among the horses in the field.

When Professor Coleman died, he was succeeded by another civilian as Principal Veterinary Surgeon—Mr. Cherry, of London—notwithstanding the many capable and experienced officers from whom a chief might have been selected. In 1854, when the office again became vacant, the veterinary surgeon of the 2nd Life Guards, the late Mr. Wilkinson, was appointed; he continued his function for the long period of twenty-two years, during which time the veterinary establishment was greatly increased in numbers, due to the bitter lesson taught by the disasters in the Crimea, where horses and men alike suffered from lack of care. Some improvements were also made during this time in the pay and position of veterinary officers, in order to induce the best men from the schools to join the army.

Hitherto veterinary officers had been gazetted to regiments; so that to these they really belonged, and formed part and parcel of their staff, wearing

their special uniforms, and accompanying them wherever they went. In 1878, however, owing to the difficulty experienced in inducing suitable men to enter, and the complaints made as to the inequality of foreign service—some cavalry regiments never serving abroad—the heavy expense of the regimental system, and for other reasons, the Veterinary Department was formed. This constituted a radical change, inasmuch as the regimental system was abolished, except in the Household Cavalry; veterinary officers were now only attached temporarily to regiments or corps, from the mess and band annual contributions of which they were absolved while so attached; they all wore the same uniform, and were placed more directly under the administration of the Principal Veterinary Surgeon; they also enjoyed a higher rate of pay, and were granted allowances which they did not before receive, and all—except those in the Household Cavalry—were placed on the same roster for foreign service. But the improvement in pay and allowances was obtained at the expense of numbers; for to obviate any increase in cost, a large reduction was made in the establishment, which, of course, made the duties heavier and gave the officers a shorter period of service at home. Not only this, but it has made the establishment at home and in India so weak, that in case of mobilisation in either country there are barely sufficient officers to meet the necessities of one Army Corps, and there are no reserves. If it were then determined to mobilise two Army Corps, it would be necessary to appeal to civil practitioners to join on such terms as would induce them to give up their practice and incur the toil, hardship, and risks of active service.

Strenuous efforts have been made for several years to admit none but the best graduates of the Royal College of Veterinary Surgeons—the licensing body of the profession—and admission to the Department can only be obtained after an exacting competitive examination, written and practical, at Woolwich or Aldershot. So carefully and searchingly are these examinations conducted, that about 50 per cent. of the candidates (who, of course, hold the Royal College diploma) are rejected as unsuitable. Consequently, the officers of the Department are a superior body of gentlemen who, in the performance of their duties, whether in peace or war, have gained golden opinions from those under whom they have served; while some have greatly distinguished themselves in science and literature, and even art has found some not unworthy students among them.

The duties of a veterinary officer in the British army are somewhat numerous and varied, due to the different climates in which he has to serve, and the special requirements of each. Under his supervision and in his care—hygienic, surgical, and medical—are horses and mules in this country, and in India, in addition to these, bullocks, elephants, camels, and on emergencies sheep and goats. The prevention of disease and the maintenance of health and efficiency, are the cardinal objects he has in view; and to be fully successful in ensuring these, he must possess ability, tact, determination, and devotion of no mean kind. His capabilities, and the extent to which they might be made available, have certainly been very slowly recognised, and this tardy recognition, still far from being complete, has not been favourable to the interests of the army, nor yet advantageous to the pockets of the tax-payers. Only too frequently the advice of the veterinary officers—administrative and executive, or both at times—has been refused or ignored by those who should have availed themselves of it, when preparing for field operations, or while these were being carried out; and the success of a campaign has more than once been imperilled or marred in consequence. I need only refer to the campaign in Afghanistan in proof of this statement, though other examples might also be offered; the history of that war is not pleasant reading, so far as the purchase and expenditure of animals, and the embarrassment resulting from mismanagement in these matters, are concerned.

In purchasing horses, mules, or camels, it is generally assumed that the veterinary officer, if one be employed along with another officer or officers, has only to deal with the soundness or freedom from disease of the animals to be bought—conformation and suitability being the special province of his coadjutor. This is a notion that, acted upon, has been productive of much mischief and loss. I have myself been engaged in the purchase of horses, when animals utterly unfit, from physical defects, for army service, though technically sound, were purchased, and in a short time cast and sold without having done a day's duty; and this because it is supposed that the veterinary officer is not entitled to give an opinion as to whether an animal is suited for the performance of a certain kind of work. The purchasing officer may be the veriest novice—indeed, he often is utterly destitute of any knowledge of anatomy and physiology, conformation or *extérieure*, as the French term it; and yet he is the responsible and authorised person who usually exerts his control without let or hindrance, only too often to the detriment of the public service. This should not be; the veterinary officer, in the purchase of animals for army service, should, from his professional knowledge and training, be placed in the same position as the army surgeon with regard to the passing of recruits, and for the same reason. When this is recognised, the army will benefit and the Treasury save money.

Though the influence of veterinary officers for good has been somewhat jealously limited, yet in their dealings with disease and its prevention it must be acknowledged they have had fairly ample scope; and in this they have justified their mission. Maladies which only a few years ago were prevalent and most destructive, have altogether disappeared; and almost yearly the causes of inefficiency are being checked or modified. I remember the time when scarcely a regiment or battery was for long free from Glanders—a deadly disorder transmissible not only from horse to horse, but from diseased horses to mankind; and when futile attempts were everywhere made to cure it. It is now stamped out from among our army horses, through the knowledge veterinary officers have acquired as to its pathology and the measures which control its suppression or extension; and so with other disorders.

It is only in India that the veterinary officer is handicapped. In that country, from an unwise parsimony and an extraordinary and unaccountable delusion, the Veterinary Department is so weak in numbers that the total in the three Presidencies would, from all accounts, barely suffice for one. Indeed, the shortsightedness of the Indian Government in respect to animal diseases and veterinary science is utterly inexplicable, if we extend our inquiry beyond the army, and look to what happens in the agricultural portion of that great Empire. Some years ago, after careful investigation, I came to the conclusion that the annual money loss alone to that country, from preventible contagious diseases among agricultural animals, could not be less than six millions of pounds. It is now about twelve years since I represented, through Lord Hartington—then Secretary of State for India—the serious damage inflicted on the prosperity of that part of our dominions from the unrestricted extension and prevalence of these animal plagues; and it was then proposed that a Civil Veterinary Department should be formed, to work under the Board of Agriculture, whose function it would be to prevent or suppress such inflictions. But little or nothing has yet been done, and the suggested department is still *in nubibus*, owing, it is sometimes stated, to the want of money. Tens of thousands of pounds are lost, because a few hundreds cannot be spared by the Government of a great dependency in which eccentric extravagances abound! When an epizootic disease is clearing whole districts of their cattle, an unfortunate officer of the Army Veterinary Department is sent to combat it, leaving another over-worked officer to attend to his military duties. It is no uncommon occurrence for an officer who is detached on this special ser-

vice to find himself placed, without assistance, in a region as large as Belgium, or even Germany, and left there to contend single-handed with, perhaps, several destructive maladies among the live stock of agriculturists, who are inclined to offer active or passive resistance to the only measures which can be effective in preserving their property. If India belonged to France or Germany this state of affairs would most assuredly not be allowed to go on from year to year: the Empire would quickly be mapped out into veterinary districts; a sufficient number of veterinary surgeons would be allotted to each of these; and in a few years these harassing pestilences would be well under control. At a cost of hundreds, thousands of pounds would be saved and much misery averted.

In a frenzy of rabid economy some years since, the Indian Government reduced the veterinary establishment in that country—already far too weak to meet military demands alone—to almost absolute impotency, when it introduced what has been termed the "station hospital system." A more extraordinary or unwise change can scarcely be conceived. It must be remembered that the chief value of veterinary science is preventing disease and maintaining health and efficiency. The cure of disease or accident is altogether secondary to its prevention, and the object which the veterinary officer should always be striving to attain is the health and full efficiency of the horses committed to his charge, for in this really lies his usefulness in a regiment or battery. In order to compensate for the comparatively large reduction in the number of veterinary officers, those that were left were removed from the regiment or corps to which they were attached, and sent to the station hospitals formed in the chief stations or cantonments, where they only treated sick or injured horses sent there from the regiments or batteries in the vicinity. This was bad for the animals, worse for the corps to which they belonged, and not at all good for the veterinary officers. To make sick or lame animals travel any distance is not judicious, if it can be avoided; to leave horses of regiments or batteries without veterinary supervision, is to favour the outbreak of disease and the advent of inefficiency; while serious cases of illness or accident may happen which cannot be moved from the stable or lines, and need immediate skilled attention; the instruction and surveillance of the farriers, if neglected—and this is another of the veterinary officer's essential duties—leads to a serious state of affairs in the shoeing forge; and to have no veterinary aid on the line of march is always hazardous. I have heard of cavalry regiments going on the march for weeks—indeed, I believe it is the rule—without a veterinary officer. This surely is most unwise. And it is almost the rule for a veterinary officer to be in charge of two, three, and mayhap, four stations, perhaps hundreds of miles distant, which he has to visit at certain periods in all seasons; or he may be summoned to attend a sick horse, and when he travels one or two days to reach it he finds it dead or beyond cure.

The evil does not cease when the regiment or battery leaves India; on its arrival at home the absence of veterinary control while abroad has left its impress, especially on the farriers, and the veterinary surgeon who then takes charge has no reason to be grateful for the introduction of the station hospital system. Not only is it objectionable for the above reasons, but it has a pernicious effect on veterinary officers, and especially those who have recently joined the service. They are removed from the restraints which discipline imposes, and are liable to become slack and negligent; the loss of intercourse with other officers is more hurtful to them than might be supposed; and they become mere curers, instead of preventers of disease and accident.

The bad effects of this will be more felt in the case of mobilisation than

during peace; as then the officers will be unaccustomed to discipline and the routine of regimental work—strangers among officers, soldiers, and animals, and inexperienced in the many apparently trifling, but really most important, details which render the presence of clever veterinary surgeons so indispensable in the field.

Owing to the solitary kind of life they lead—isolated, as it were, from the companionship of those they would be thrown into sudden contact with in the event of war—and worked almost beyond endurance, with little or no leave all the year round, the ultra-attenuated veterinary staff in India has every reason to complain; and complain most bitterly the great majority of them do. With them Indian service has become most unpopular; they return home as soon as their foreign tour has expired—they may be invalided from disease or the effects of over-work more than once during their tour; and large sums of money are offered for exchanges when their turn comes round again to leave home for another six years' expatriation, and the same repugnant round of duty and enforced isolation.

Perhaps of all the officers serving in India, those of the Veterinary Department are least cared for and encouraged. For their services in the field they are rarely mentioned, and still more rarely rewarded, no matter how highly they may be commended and recommended by those under whom they have immediately served, and who are therefore in the best position to appraise their services. Their duties during a campaign are of the most arduous and trying kind, and the work they are called upon to do, or are expected to perform, is out of all proportion to their number. It is not at all uncommon for a veterinary officer to be placed in charge of many thousands of animals; and it has happened more than twice or thrice, that only one has been despatched with an expedition when a dozen would not have been too many. I believe I am correct in stating, that during the recent operations in Burmah, there were never more than two or three veterinary officers. The deadliness of the climate makes no difference in this respect; and to this extreme niggardliness in detailing veterinary officers for active service, must be largely ascribed the enormous mortality which invariably occurs among animals in every Indian campaign, that in Afghanistan affording the most startling example in recent years.

It need not be surprising, then, to be continually reminded that war service in India is not desired by veterinary officers; for while it entails Herculean labour and risks of all kinds, it brings with it none of the compensations so freely bestowed on other officers. It is something of a humiliating, as it is certainly a most discouraging fact, that no veterinary officers have ever been decorated for service in India, notwithstanding the long years they have toiled there and the war service they have placed to their record. The mention of this is not creditable to the Government of that country, and is certainly not to its advantage.

It is true, that until 1882 no veterinary officer of the Home section of the Department had been decorated. In that year the chief veterinary officer with the force sent to Egypt received the Companionship of the Bath. In this instance, the military division of the Order was awarded by mistake; as, although veterinary officers accompany the corps to which they are attached into the field; are under fire, and exposed to capture and other risks; yet by the Statutes of that Order they are only eligible for the civil division, while the surgeon, who is under the protection of the Geneva Cross (the veterinary officer is not so privileged), and the paymaster,* who never goes into the field, receive the military division. This anomaly, I hope, will soon be

* This is an error. Paymasters are only privileged to receive the civil C.B., but surgeons and commissariat officers are eligible for the military division of that Order.

removed, as it is a grievance that can be remedied without an appeal to the Treasury.

At any rate, when compared with their maltreatment by the Indian Government, veterinary officers in this country have not much reason to be dissatisfied. When compared with those of other European armies, so far as pay and position are concerned, they are perhaps to be congratulated. Their relative rank is about the same, though in the Italian army the veterinary officers have substantive titles; but the pay in the British army is higher. This one might expect, when it is considered that our officers come into the service without having cost the country one penny for professional education; and before they can enter they must have studied at least three years at a veterinary school, having undergone a somewhat high preliminary examination before admission to it; and that the expenses attending a military career in a mounted corps of our army are much greater than in the armies on the Continent. In foreign countries, the veterinary surgeons are professionally educated to a large extent, or entirely, at the cost of the State, and their expenses in the army are comparatively small.

As to their respective professional competency, it would not become me to speak, seeing the official position I lately occupied; but this I think I may safely say, without incurring the charge of boasting, that they are not a whit behind those of any other army in professional ability, as the Annual Reports of the Department show; while, for devotion to their duty, performed sometimes under very trying conditions, intelligence, and gentlemanly conduct, so far as I have been able to observe, they are surpassed by none.

Great attention is now being paid to the organisation of the Veterinary Departments of the principal foreign armies, and especially that of France, but that of our army is more complete, I believe, than any; and in some things it is ahead of them. Like the British soldiers, the number of veterinary officers is unfortunately too small for the work required of them; but if they receive a fair amount of encouragement and recognition, they will maintain the reputation they have made in days when their prospects were much darker than they now are. Though they are more severely taxed by foreign service than those of other armies, they still contrive to hold a foremost place in the cultivation of their calling; while their wide range of experience in other lands gives them an advantage which these others cannot claim.

THE AMERICAN HOG CHOLERA AND GERMAN SWINE FEVER.

Dr. Francesco Raccuglia (*Centralblatt f. Bakt. und Parasitenk*, Bd. viii. No. 10, August 29, 1890, p. 289) comes to the conclusion that the bacteria found in American and German Swine Plague are not identical; they differ not only in microscopic appearances, but also in the manner in which they take on stains and in their vital reactions. The bacillus of Hog Cholera is slightly motile, and grows somewhat rapidly; that of the German *Schweineseuche* is motionless, and multiplies more slowly at the ordinary temperature. They both behave in much the same way when inoculated into mice, pigeons, and white rats, but hens, although not affected by the Hog Cholera bacillus, are killed in twenty-four hours by that of *Schweineseuche*. In rabbits there is no local reaction when the former is inoculated, but small yellowish or grey points appear in the liver; whilst in the case of the latter there is œdema and thickening of the muscular and subcutaneous tissues at the point of inoculation, but there are no changes in the liver. The bacillus of Hog Cholera, introduced into a loop of the small intestine of the rabbit, caused death in four days, and there were found swellings of the glandular tissue of the intestine and ulcers. With the organism of *Schweineseuche*, introduced

in the same way, death resulted in from two to six days; nothing was found but peritonitis. In neither case did inoculation of swine in the subcutaneous tissue, or intraperitoneally, or by feeding experiments, cause death, but when introduced into a loop of the ilium the bacillus of Hog Cholera gives rise to swelling of the lymphatics and mucosa and ulceration, and to small grey points in the liver similar to those already mentioned. The bacillus of *Schweineseuche*, when introduced into the ilium, gives rise to no changes in the alimentary canal. On this evidence Dr. Raccuglia confirms the opinions already published, that the Hog Cholera bacillus and the Loeffler-Schutz *Schweineseuche* bacillus are not identical.

GLANDERS IN THE UNITED STATES OF AMERICA.

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Of the biological character of bacteria, their growth or multiplication outside of the body on various substrata is very important, for by this means of so-called cultivation we can determine how far they are capable of growing in our environment and thus keeping up the infection, between what temperature limits multiplication may take place, also whether any resistant spore state is entered upon during their life. There is still another advantage to be derived from cultivation—one which mainly concerns us now—the ability on our part to diagnose between one organism and another by characters of growth discernible with the unaided eye. The bacilli of Glanders have certain features in cultures which are of great use in distinguishing them from other organisms.

They grow very well on blood serum from horses and sheep, less abundantly on that from cattle. On the third day after inoculation of such media, minute droplets of a translucent yellowish colour appear on the surface of the serum. These droplets, or "colonies," consist entirely of bacilli which have descended from perhaps a single bacillus originally deposited there. The material composing the droplets is of a viscid consistency, and may be drawn out on the platinum needle into thin threads. After eight or ten days this yellow translucency is replaced by a milky opacity.

A very good soil for the multiplication of these bacilli is the cut surface of boiled potatoes. Löffler and Schütz describe the very characteristic appearance substantially as follows: Already on the second day the surface of the potato is covered with a delicate yellowish translucent layer, which becomes amber-coloured later on. After six or eight days a reddish colour appears; the transparency is lost and the colour suggests the red of cuprous oxide. The potato surface bordering the growth assumes a pale greenish appearance. This description applies very closely to the potato cultures made in the laboratory of the Bureau. A very striking appearance is produced when bits of tissue are used to inoculate the potato, since the bacilli, not being very numerous, the colonies appear isolated instead of being fused into a uniform layer. They are exceedingly small at the beginning of the third day, scarcely recognizable. Towards the end of the third day, the cultures being kept at 37° C, the colonies are visible as minute hemispherical masses of a delicate translucent, pale-yellow tint. In fact, the cut surface of the potato appears as if sprinkled with a pale-yellow serum. Gradually the colour changes as above described and the colonies fuse into an opaque layer.

The probability of a multiplication outside of the animal organism of Glanders bacilli is very slight. Experiments have shown that they do not develop when the temperature is less than 25° C. (77° F.), and then only on certain substances, such as boiled potato, blood serum, *agar-agar* with

peptone. When infusions of hay, straw, oats, wheat, and manure, such as form in and around stables, were inoculated with Glanders bacilli no multiplication took place, even at the most favourable temperature. Owing to the high temperature necessary for this multiplication, gelatine cannot be employed as a culture medium.

It has already been stated that Glanders bacilli have no movement of their own. This I can confirm from numerous observations. Only the slight dancing movement observed among all bacteria suspended in liquids could be detected. There seems to be a difference of opinion, however, on this important point. In Eisenberg's *Bacteriologische Diagnostik* they are characterized as actively motile, and this statement is repeated in a second edition recently issued. If this difference of opinion depends on a difference in interpretation of the same object, it is high time that bacteriologists define clearly what is meant by motility.

My own observations differ from those of Löffler and Schütz in regard to its growth in liquids. They state that in neutralized bouillon prepared from muscular tissue of man, horse, sheep, rabbit, beef, and fowl, with or without 1 per cent. peptone, it multiplies very well. At the end of the second or third day the liquid becomes clouded, and finally a viscid, whitish deposit forms. Our observations extend only to cultures in slightly alkaline beef infusion peptone. These have never shown a perceptible clouding. The liquid remains limpid, and one might say after a short inspection of the tubes that there was no growth. When vigorously shaken up, however, a yellowish-white deposit is seen rising from the bottom as a twisted column when the culture is one or more weeks old. This very viscid mass consists of Glanders bacilli. It is probable that by varying the reaction of the liquid slightly, or the meat employed, a fluid medium may be obtained in which the bacilli of Glanders as found in our country may grow like those studied in Berlin. At all events, so far as my experience goes, I should feel very suspicious of a bouillon culture of Glanders which became clouded in two or three days after inoculation.

Glanders bacilli change their form more or less in cultures as the latter grow older. This is without doubt a degenerative process, and the changed bacilli are dead, or nearly so. True rod forms are seen in sections of tissues and in very young cultures only. In older cultures they no longer appear as true rods, but the change of form is not easily made out, owing to the minuteness of the objects under examination. A frequent form is that of an oval, and even a coccus, in which the stained area is limited to one side or frequently to the two poles, leaving an intervening clear space, which has been described by some observers as a spore. It has no refractive power, however, and can only be considered an empty space in the interior of the bacillus. Other degenerative or involution forms, giving rise to the appearance of a chain of cocci, are now and then observed. It must not, therefore, be inferred that cultures of Glanders bacilli are necessarily impure when very few slender rod forms are met with.

Diagnosis of Glanders.

The foregoing brief description of Glanders bacilli and of their cultures is of great service in diagnosis. Cultures made from the spleen or liver tubercles of slaughtered horses, exhibiting the characters already described, would prove beyond a doubt that the animals had been affected with Glanders. But veterinarians in most cases are able to make a diagnosis on *post-mortem* examination without the aid of cultures. The question to-day is whether Glanders can be positively diagnosed in the living animal, especially when the gross appearances of Glanders are obscure and the animal is a valuable one.

If cultures of the specific bacilli could be obtained directly from the living animal the problem would be very simple. Those accessible organs or parts of the horse which may be the seat of disease are the nasal passages, the submaxillary glands, and the skin or subcutaneous tissue. Frequently only one of these parts is involved. But it is impossible to make cultures from the nasal ulcers or discharges because they contain, besides the specific bacilli, many other bacteria. In tubes inoculated from such material a single day would suffice for the rapid multiplication of the other bacteria so as to entirely crowd out or bury up any Glanders bacilli that may have been present, as the former grow many times more rapidly. When nodules are present under the skin it is highly improbable that the bacilli can be obtained therefrom in pure cultures during the life of the animal, owing to the danger of contaminating the cultures. When the nodules have once broken down into ulcers, numerous other bacteria lodge in them, and cultures are then out of the question. It has been suggested recently that the enlarged submaxillary glands be removed and examined for Glanders bacilli. Thus far we do not know in what numbers they are present in these enlarged glands, and it would require considerable preliminary study to determine whether cultures are successful when made from them.

The direct determination of Glanders by means of microscopic examination and cultivation is thus far not feasible.

The question might be asked, Why not isolate the Glanders bacilli from the impure discharge from the nose, or from ulcerated Farcy buds, as we should do in searching for the comma bacillus in the bowel discharges of Asiatic Cholera? This might unquestionably be done, but it would be a very tedious method, requiring much minor apparatus and still more patience, and in the end the result might be negative. The reasons for this are various. Glanders bacilli do not grow in gelatine at the temperature at which plate cultures can be used. *Agar* plates might be used, but germs grow upon *agar* very much alike, and as Glanders bacilli are, as a rule, very scarce in discharges, the labour of examining microscopically a large number of colonies to find the right one would become very great. Finally, they grow very slowly, and would be in danger of being overrun by the colonies of putrefactive germs which grow very rapidly in the thermostat.

Cadéac and Roy (*Journal de Médecine Vétérinaire*, May, 1888) made cultures on potato directly from the nasal discharges of various animals, and claimed from the similarity of the colour of the growth from these different sources to cultures of Glanders bacilli that this method of diagnosis is of no value. The authors have entirely mistaken the method. Neither Löffler nor any other subsequent German observers have maintained that cultures made on potato from the nasal discharges or any other product in contact with the air have any value whatever. The fundamental principles of bacteriology are directly opposed to the indiscriminate cultivation of a number of germs on the same substratum, and especially the potato. Only those disease products which have not yet been exposed to the air, or which are buried in the depths of vital organs, can be used for cultivation.

The method which is now in use more or less, and which was perfected by Löffler and Schütz, consists in inoculating small animals, more especially guinea pigs, with the disease products. These in turn develop the disease, the nature of which may then be determined by the lesions of the inoculated animals, both internal and external, or more positively demonstrated by cultures from the various organs. In this method the animal body becomes, so to speak, the culture flask, and a very perfect one, too, for it not only permits the disease germs to multiply in the various organs, but it also speedily destroys all other germs inoculated at the same time, leaving the Glanders bacilli in entire possession of the field.

The inoculation of species of animals other than the horse and ass, which are naturally susceptible to this disease, has been tried by many investigators. These experiments need not be recounted here, as they are not pertinent to the subject under discussion. They have shown that cattle are insusceptible; that goats and sheep may take the disease after inoculation, the former even spontaneously. Lions and tigers in menageries have contracted Glanders by feeding upon the raw flesh of glandered horses. Cats contract the disease in the same way and are susceptible to inoculation. Dogs are less susceptible than cats, both when fed and inoculated. Coming to those smaller animals which might serve a useful purpose in making a diagnosis, we also find great variety in the relative susceptibility. Among those which have been tried are rabbits, guinea-pigs, white mice, white rats, field mice (*Arvicola arvalis* and *Arvicola terrestris*), pigeons, fowls and several other rodents. Of these the white mice, white rats, and fowls, were found practically insusceptible; the rabbits varied in this respect; some contracted the disease after inoculation, others did not. Guinea-pigs and field mice proved to be uniformly susceptible when inoculated, both with material directly from the animal and with bacilli from cultures.

The course of the disease and the lesions produced in guinea-pigs are well described by Löffler. As a place of inoculation he chose one side of the abdominal surface, about half-way between the axilla and the groin. The hair was carefully cut away, a fold of skin raised and cut through completely with scissors. Into this incision, about two-fifths inch long, a flamed needle was introduced and moved to and fro under the skin, to form a little pocket for the reception of the infectious material.

At the place of inoculation an ulcer forms during the first week, with suppurating base and thickened border. Towards the end of the first week the nearest lymphatic glands, in this case those near the groin, begin to enlarge. The lymphatics themselves do not, however, swell into cords, as is true of Farcy in the horse. The glands grow to the size of hazel-nuts, sometimes larger, and their contents soften into a puriform mass. The capsule as well as the skin over it may rupture, and the contents discharge on the surface. When this takes place early, numerous Glanders bacilli are found in the discharged pus. In some animals the disease may stop here and the ulcer heal. The primary ulcer usually heals in from two to three weeks. The guinea-pig after four to six weeks may have entirely recovered. In the majority of guinea-pigs, however, the disease ends fatally. In the second week the testicles of the male contain hard, nodular places. Inflammation sets in, the overlying skin becomes red and œdematous, and finally breaks. Puriform masses, containing numerous bacilli, are discharged. In females the labia and mammæ more rarely inflame and suppurate. At about the same time one hind or fore foot may begin to inflame, swell, and give rise to great pain on pressure. Sometimes the inflammation may leave one foot and appear in another; more rarely all feet may be affected. They may also become ulcerated, but as a rule the death of the animal ensues before this takes place. Besides these characteristic changes in the feet and testicles, there may be nodules in and under the skin in different regions of the body which may also break and form ulcers. In the face these nodules start from the periosteum, or even the bone itself. The mucous membrane of the nose was involved in only one-third of the eighty-five cases studied by Löffler. The disease process was first noticed at about the same time with the swellings of the feet, and manifested itself by difficult breathing and sneezing. The secretion is scanty and dries up into brownish crusts around the external nares. This lesion is speedily followed by emaciation and death, which usually takes place in the third or fourth week, sometimes as early as the second and as late as the eighth week.

At the autopsy the place of inoculation may be occupied by an ulcer or healed and cicatrized. The inguinal or axillary glands are swollen and contain small abscesses, or the whole gland may have been converted into pus inclosed in the gland capsule. In the skin are abscesses as large as peas or hazel-nuts, in part healing. One or more feet are swollen. The swelling may be due to a periarticular abscess, to inflammation of the joint itself, or of the ends of the bones forming it. The lungs usually contain a variable number of small grayish-yellow nodules, situated chiefly under the pleura. In almost every case the spleen is involved. It is enlarged, and contains a large number of minute, slightly projecting, yellowish nodules, some attaining the size of a pin's head. They are frequently found in the liver, though in smaller numbers. In the omentum, the suspensory ligament of the liver, and the retro-peritoneal tissue small abscesses may be found. In the testicles, and more especially the epididymis, the earlier stage of the disease is indicated by the presence of reddish-gray nodules as large as pins' heads. Later on these have been converted into larger, cheesy masses, in some cases broken through the skin. In females the ovaries are rarely involved, more commonly the mammæ. The mucous membrane of the nose is usually reddened and swollen. Small ulcers may be present on the septum and the turbinated bones. The presence of Glanders bacilli is determined microscopically without any difficulty when the disease process is recent. When suppuration has set in it becomes more and more difficult.

Löffler also experimented with field mice (*Arvicola arvalis*), which he found very susceptible to inoculation with cultures. In most cases death ensued from three to five days after inoculation into the subcutaneous tissue near the root of the tail. The spleen and liver were quite invariably crowded with barely visible nodules. Rarely the joints of the feet became diseased. Lesions in the lungs and skin were absent.

Kitt,* experimenting upon wood mice (*Mus sylvaticus*), found them very susceptible to inoculation. When either cultures of Glanders bacilli or bits of tissue containing them were placed under the skin of these animals they lived from eight days to one month thereafter. The spleen was very much enlarged, dark red; on its surface and on section were numerous grayish-yellow nodules barely the size of a pin's head. At the place of inoculation there is usually a dry scab, accompanied occasionally with some suppuration or œdema. From the experiments noted by the author, it would be difficult to infer how far these mice are of value in making diagnosis from nasal discharges—that is, how far they are capable of resisting septic infection.

In a more recent communication (*Oesterr. Monatsschrift f. Thierheilkunde*, January, 1888), the same author experimented with a species of rat (*Arvicola terrestris*). Of fourteen inoculated with pus from a glandered guinea-pig into the subcutaneous tissue of the abdomen, all died in from four to ten days. There is usually an ulcer formed at the place of inoculation, with enlargement and suppuration of the neighbouring lymphatic glands, enlargement of spleen, which contains numerous yellowish-white nodules. Not infrequently grayish nodules are present in the lung tissue. Besides these rats, *Erinaceus Europœus* was also tested with reference to its susceptibility to Glanders. Inoculation was uniformly successful. The spleen and lung tissue were the chief seat of the disease, both being infiltrated with tubercles readily visible to the naked eye. But to these animals the same objection applies in so far as they were tested with material containing Glanders bacilli only, which does not prove their utility when septic material must be inoculated. Their resistance to Septicæmia can only be determined by inoculating the nasal secretion from glandered horses.

* *Centralblatt fur Bacteriologie*, 1887, ii., p. 241.

In Russia the bacteriological station at Odessa* reports favourably the use of a rodent (*Spermophilus guttatus*) which takes the place of our prairie dogs in that country, and is closely related to it. Of twenty-eight inoculated sixteen died on the fourth day, nine on the fifth, two on the seventh, and one on the tenth day.

Of these animals, nearly all of them rodents, the guinea-pig is considered the most satisfactory. The other animals are more or less susceptible to Septicæmia, caused by bacteria present in secretions and discharges in contact with the air. They are therefore liable to die of Septicæmia before Glanders is developed. At the same time this does not exclude the use of these rodents when guinea pigs are not to be had, provided a sufficient number, say, at least five or six, are inoculated from the same horse. They would require a careful bacteriological examination to make sure of the nature of the disease. In guinea-pigs, on the other hand, the external signs of disease, such as the swelling and suppuration of lymphatic glands, testicles, and feet, the formation of abscesses and ulcers in and under the skin, and the not infrequent nasal disease, are sufficient of themselves to decide the question without bacteriological evidence. Guinea-pigs very rarely die of Septicæmia or putrid changes under the skin as the result of inoculation.

The animals above mentioned are not indigenous in our own country. Dr. C. Hart Merriam has kindly furnished the names of a few American representatives or closely allied forms. *Arvicola riparius*, the meadow mouse, may be used for *Arvicola arvalis;* for *Arvicola terrestris, A. austerus*, for *Spermophilus guttatus, Sp. Townsendi* or *Sp. Richardsoni*, which is common in northern Dakota. Of *Erinaceus Europæus* there is no American representative.

Those who are called upon to make diagnosis of Glanders should endeavour to always have a supply of guinea-pigs on hand. In order to make the diagnosis of value, Löffler recommends that from three to five should be inoculated, and not simply with a prick of the lancet, but larger quantities (a large drop) of the mucus from the nose should be placed in a pocket under the skin, as already described. The greater number survive the inoculation and show positive signs of Glanders in two weeks. Males should be used whenever possible, owing to the characteristic lesions of the testicles.

The following experiments were made during the year 1888 with the purpose of determining how far the statements in the preceding pages could be relied upon in making a diagnosis. The great majority of the inoculations were made upon guinea-pigs, from the nasal discharges of glandered horses. Many of the latter had ulcers on the septum of the nose which could be seen, so that the diagnosis of Glanders was made without resorting to inoculation:

I. January 21st two adult guinea-pigs (Nos. 1, 2) were inoculated with a lancet, the material being taken from nodules in the lungs of a glandered horse. No result.

II. April 13th two guinea-pigs (Nos. 3, 4) were inoculated subcutaneously on the left side of abdomen with nasal discharge from a horse suspected of chronic Glanders. Guinea-pig No. 3 was found dead May 5th. It had for ten days previous nasal discharge. Of the autopsy the following lesions were noted: Left fore limb and right hind limb very much swollen. In the right inguinal region an ulcer with ragged border one-half inch across. The left inguinal lymph gland enlarged and containing several whitish nodules about the size of a hemp-seed. In the nasal passages considerable purulent matter. Spleen enlarged, thickly dotted with very small whitish masses.

From this animal no cultures were made, but two fresh adult male guinea-

* Kranz'eld: *Zur Kenntniss d. Ro'zbacillus. Centralbl. f. Bacteriologie*, 1887, ii., p. 273.

pigs were inoculated each from the spleen and inguinal gland by taking bits as large as hempseeds and placing them under the skin. One of them has, on May 20th, an open, dry sore, one-half inch across, adjacent to the place of inoculation. The inguinal gland and testicle are considerably enlarged. The skin over the latter is becoming abraded. Some days later the right fore limb was very badly swollen. It was killed June 4th.

There were several small ulcers on the surface of the body; the right fore foot swollen. From the spleen cultures were made on *agar*, potato, and in beef infusion. All remained sterile. The other guinea-pig recovered. The inguinal gland had been slightly enlarged at one time.

Guinea-pig No. 4 inoculated with nasal mucus April 13th, showed only slight enlargement of axillary and inguinal lymphatics May 5th. Four days later, the right fore leg was badly swollen, and an ulcer had formed on the top of the nose. It was killed with chloroform May 12th, twenty-nine days after inoculation. At this time the swelling of fore leg had subsided, the place of inoculation had healed, but the neighbouring inguinal gland was one-half inch in diameter. Spleen slightly enlarged, very pale. Liver dark. In neither are nodules discernible. Cultures were made from spleen and the enlarged gland. The hair was carefully clipped away and the skin blackened with a red-hot spatula in the line of the proposed incision. A flamed knife was then thrust into the gland, which was found converted into a soft, white, cheesy mass. The *agar* cultures from spleen remain sterile. Those from inguinal gland contain on the third day colonies of Glanders bacilli. On the potato inoculated from the gland about twenty translucent, serum-like colonies appear from one to two millimeters in diameter. Examination shows them to be made up of Glanders bacilli.

Bacilli from this culture, suspended in sterile beef infusion, were injected subcutaneously into a guinea-pig on the left side of abdomen May 15th. Five days later the testicles began to enlarge, and within three weeks the were both 1½ inches in diameter. The animal was killed June 4th. The spleen was slightly enlarged, but without nodules. At the place of inoculation a fluctuating mass under the skin, about one-half inch in diameter, filled with a soft, cheesy, yellowish-white pus. On both testicles were ragged, blackish depressions, as if the skin either had broken or was about to do so. The contents of both were entirely converted in yellowish-white, cheesy pus. From one of them cultures were made, as indicated above. On the third day typical colonies of Glanders bacilli had appeared.

III. April 6th, two guinea-pigs were inoculated subcutaneously with scrapings from the base of ulcers on the nasal septum of a horse killed for Glanders. Up to May 10th the place of inoculation had healed in both cases. In one, an inguinal gland and the testicles were enlarging. May 26th, this one was killed, as it was growing gradually worse. At the autopsy the left inguinal gland was about one-half inch in diameter, the contents easily expressed as a thick creamy pus. The inguinal gland of the other side about half as large. The left testicle has a broad scar with blackened base, evidently a rupture through which the contents had been discharged, which accounts for the shrunken size of the gland. The other testicle consists of two enormous abscesses, apparently not communicating with each other (testicle and epididymis), containing liquid pus. Between the nose and the right eye an ulcer with a blackish dried-up base and irregular margins. Two days later a potato culture, made from the spleen, contains a moderate number of isolated colonies characteristic of glanders. An *agar* culture did not grow. From one testicle two *agar* cultures contain numerous colonies. From the enlarged inguinal gland both an *agar* and a potato culture developed numerous colonies. These were characteristic, both macroscopically and microscopically, of Glanders.

From the potato culture of the inguinal gland, when ten days old, two mice were inoculated by injecting subcutaneously a few drops of a suspension of bacilli in sterile bouillon. Both remained well. The second guinea-pig, inoculated from the same horse, did not take the disease.

IV. April 27th, a young female guinea-pig and a rabbit were inoculated with pus from Farcy buds (Glanders of the skin). The rabbit remained well; the inoculation wound was healed at the end of two weeks. In the guinea-pig the wound had also healed, but the inguinal gland was beginning to enlarge. May 16th the gland was much larger, and the labium on the same side was beginning to swell up. May 20th, a swelling about the size of a walnut appeared under the skin above the hip of opposite side. This broke later on. Found dead May 24th. Besides the lesions already mentioned both fore feet and the right hind foot were swollen. The contents of the enlarged inguinal gland were puriform. In the labium a small abscess. Cultures were made on various media from the spleen, lymph, gland, swollen labium, and blood. Those from the spleen and gland were pure cultures of Glanders bacilli; those from labium impure.

From the spleen and inguinal gland of this guinea-pig two young male guinea-pigs were inoculated May 24th, each receiving a minute portion from both sources. June 7th one was killed. Both forefeet are swollen over the carpal and matacarpal joints; the right has a depressed place concealed by a scab. The left hind limb is also swollen over the tibio-tarsal joint. The place of inoculation is covered by a scab. The inguinal gland and testicles are not swollen. The internal organs are not visibly altered. Cultures were only made from spleen pulp on *agar*, which remained sterile.

The second guinea pig recovered.

V. June 4th, from the nasal discharge of a horse affected with Glanders, two guinea-pigs, two young rabbits, and a young dog were inoculated, all in the same manner under the skin, as already indicated. One of the guinea-pigs died July 9th. It had a large ulcer with black dried-up base behind the left nostril, three on abdomen, and one on the right flank three-fourths inch in diameter. There was also an ulcer on the left heel and right fore limb. The right heel was considerably swollen. The left testicle was also quite large. The spleen was free from nodules. Cultures on *agar* and potato were made from the spleen only. These were found subsequently to be impure.

The second guinea-pig had large swellings in the groin, and was unable to use its hind limbs for a time, but it finally recovered. The rabbits and dog were not affected. At the autopsy of the horse, from which these had been inoculated, the left nasal passage and adjacent sinuses had the mucous membrane partly thickened and eroded. There were also nodules in the lung tissue.

VI. July 27th, three guinea-pigs were inoculated subcutaneously as before with a nasal discharge from a horse affected with Glanders. One of these, a small male, died August 11th. On the right side of abdomen an ulcer about three-eighths of an inch in diameter, with a cup-shaped, dark, dry crust covering it. When removed, a soft, cheesy mass, involving subjacent muscles, is exposed to view; serous surface not involved. No enlargement of gland. Putrefaction had set in and no cultures were therefore made.

At this time a peculiar disease was carrying off healthy guinea-pigs quite rapidly, which was traced to the dry food given them. It is probable that this guinea-pig also died of this disease, although evidently infected with Glanders. The second guinea-pig died during my absence and no examination was made. The third, however, developed Glanders in a marked degree and was killed August 23rd, twenty-seven days after inoculation. On the right side of abdomen, near median line, an indurated mass covered by a black crust. The abdominal muscles and the peritoneal covering are intact,

but between them and the crust is a cheesy mass. Similar ulcers exist on right flank and on right thigh externally. The right fore limb and both hind limbs are swollen, especially the right hind limb. This is three-quarters of an inch thick, bluish, ulcerated between first and second toe. Internal organs seem unchanged, although the spleen contained Glanders bacilli. On each of three potato cultures from this organ from fifteen to twenty-five typical colonies appeared within three days.

VII. September 21st, two guinea-pigs were inoculated with nasal mucus from a horse suspected to be affected with Glanders. One died October 12th. There were two ulcers on the abdomen about one-half inch across, the floor of which was formed by the muscular wall of the abdomen. The inguinal gland of the same side as large as a walnut, and containing a cream-coloured liquid pus. Spleen, not enlarged, contains a large number of minute whitish dots.

In all cultures on potato, from both spleen and pus of inguinal gland, the typical pale-yellowish colonies of Glanders subsequently appeared. The second guinea-pig was killed with chloroform October 16th. At the place of inoculation a small ulcer had formed, and the nearest inguinal lymph gland was equal in size to a small marble. The left testicle was enlarged and contained a pus cavity. The spleen small. From the pus of the testicle an *agar* culture was prepared; a potato culture from the spleen. Only the former developed colonies of Glanders bacilli.

VIII. September 22nd, two guinea-pigs, inoculated with nasal mucus from a horse probably affected with Glanders. One died September 30th, very much emaciated. Over lowest ribs on the left side a cheesy nodule, about one-half inch in diameter, representing the place of inoculation. The inguinal gland of same side as large as a small bean. On the same side the subcutaneous tissue is infiltrated with a translucent exudate, sufficient to make the surface of the muscles and under surface of the skin glistening and slippery (malignant œdema?). In spleen about fifteen tubercles, greyish, one millimeter (one-twenty-fifth inch) across; on the various lobes of the liver similar but smaller tubercles; on lungs greyish subpleural nodules, irregular in outline, embedded in areas of a dark red hepatization.

Two potato cultures were made from spleen tissue, and within three days twenty to thirty drop-like colonies, resembling a pale-yellow serum, so characteristic of Glanders bacilli, made their appearance.

The second guinea-pig was chloroformed October 15th. In the left groin the lymph gland is converted into an abscess, about the size of a marble, containing a soft, cheesy, cream-coloured pus. The right testicle, enlarged, contains an abscess; a few nodules in spleen. A potato culture from the latter organ failed to develop.

IX. November 29th, from a horse killed and found glandered, a guinea-pig was inoculated by inserting some purulent matter from the ulcerated septum under the skin. It died December 13th. At the place of inoculation just behind the right fore limb, an ulcer covered with a thin scab. Underneath, a thin greyish layer of pus. Near this ulcer is a nodule equal in size to a small bean, containing soft curdy pus. The inguinal gland of the same side is equally large, one-half of it converted into pus. Spleen pale, slightly enlarged, and dotted with a large number of greyish points. Testicles in abdomen not yet affected, but the fold of skin surrounding anus on the left thickened and superficially ulcerated. On section a number of yellowish nodules in the thickened fold. One retro-peritoneal gland as large as a marble and converted into pus. Convex surface of both lungs dotted with a small number of bright red points.

From the spleen and from the abscess under the skin three potato cultures and one *agar* culture were made. All developed numerous characteristic colonies of Glanders bacilli on the third day.

An inspection of the autopsy notes will show that nearly all inoculated guinea-pigs showed unmistakeable signs of the disease, and that only a few recovered. Of those that were killed the lesions were such as to preclude recovery. In most cases the diagnosis of Glanders could be made without having recourse to cultivation. In order to be thus successful it is necessary to observe strictly the method given for inoculation, and to avoid the error of using too small a quantity of the nasal discharge. It will also be noted that the lesions characteristic of Glanders in guinea-pigs did not all appear in the same animal. In some, enlargement and suppuration of the inguinal glands was the only external sign; in others swelling and suppuration of the testicles took place. Again, abscesses becoming ulcers later on appeared in different parts of the body, combined with swelling of the limbs. When the external lesions were prominent, internal lesions were generally less marked. The formation of nodules in the spleen was infrequent, in the lungs rare, and in the liver observed in but one case. In general, internal changes were secondary to external.

Cultivation of Glanders bacilli from inoculated guinea-pigs is always desirable, though not absolutely necessary in many cases. The foregoing notes show that pure cultures may always be obtained from still unopened abscesses under the skin, such as those of glands and testicles, by following the method already mentioned, *i.e.*, thoroughly scorching the surface of the skin after removing the hair, and then making the incision through the scorched area. This makes unnecessary the use of disinfectants. Cultures from the spleen are not always successful, when those from the abscesses are, perhaps because the bacilli are not always present in the internal organs in numbers large enough to inoculate a culture tube. Hence, it is always advisable to inoculate from any abscess that can be reached from the skin or any suppurating gland in the abdomen.

Cultures from the spleen were made by tearing off a bit of spleen pulp from the carefully exposed spleen and rubbing it gently with the platinum wire over the *agar* or potato surface, so as to free the bacilli from the tissue and distribute them over a larger surface. In this way very fine cultures of isolated colonies on potato can be obtained, which in the earliest stages, when the colonies just begin to be visible to the naked eye after a sojourn in the thermostat at 37° C. for forty-eight to seventy-two hours, are very characteristic. The *agar* cultures I have found less characteristic, and hence less valuable for purposes of diagnosis. Cultures from the pus of abscesses contain a much larger number of colonies, and these are apt to be confluent unless a very small quantity is used. It is best to make several inoculations with different quantities of pus.

The potatoes used were prepared according to the method suggested by Bolton (*Medical News*, 1887, i, 318). They are pared and cut in such a way as to fit into large test tubes. The top is cut so as to form an inclined surface upon which the inoculated material is to be deposited. A small amount of water is put into the test tube to keep the lower end of the potato constantly wet. The tubes are then plugged with cotton wool and kept in the steam sterilizer from one and one-half to two hours. If then the lower end of the plug is dipped into sterile melted paraffine the evaporation and consequent drying up of the potatoes is reduced to a minimum. In such tubes Glanders bacilli grow very well, and as a rule their growth will depend on the condition of the potato surface as regards moisture. The will be no growth, or at best a very feeble growth, if the surface of the potato is partly dry and hard.

Of the few house mice, rabbits, and the dog inoculated, none took the disease, thus confirming the results of Loffler and others that these animals are not proper subjects for inoculation.

It is, in general, best to chloroform guinea-pigs when the lesions have become pronounced, especially when the cultures are desired. If allowed to die, the term of the disease is unnecessarily prolonged; they are very apt to die at night, and in midsummer decomposition immediately sets in. Moreover, death may take place through secondary infection of the body with septic bacteria, which enter through the ulcers. In such cases pure cultures can no longer be expected. It is often necessary to make a diagnosis as speedily as possible, to release or destroy the suspected horses as the case may be. Hence, as soon as the external lesions, such as suppuration of the glands or testicles, has fairly begun, the animal may be killed and cultivations made from the pus in these organs. This may be all the more desirable if several guinea-pigs have been inoculated at the same time, one or more of which should be kept for future examination if the first should fail to yield any positive result.

Diagnosis of Glanders by extirpating the submaxillary lymphatic glands and making cultures therefrom.—It has been suggested that the diagnosis of Glanders in the horse may be made directly by removing during life the swollen submaxillary glands situated on the under surface of the lower jaw and making cultures from them. Such operations can of course be undertaken only by veterinarians. Occasionally the swelling of these glands is the first suspicious sign. The swelling may be simply due to an increase and condensation of the substance of the gland. When the disease has existed for weeks and months the interior of the lobes of the gland usually contain minute cavities filled with a dry, caseous substance. These are considered almost diagnostic by Dieckerhoff.

Rieck (*Zeitschr. f. Thiermedicin*, 1888, xiv, 107), recently reported a case in which the diagnosis was made in this way:

A seven-year-old mare from a stable in which six cases of Glanders had occurred within the past six months was suspected of Glanders. The only sign upon which this suspicion was based was a painless, diffused, by no means characteristic swelling of the right submaxillary gland. There was no nasal discharge, no cough. The gland was removed, placed for fifteen minutes in a $\frac{1}{10}$ per cent. solution of mercuric chloride, washed in alcohol and cut with flamed knives. In the substance of the gland were found two grayish-white soft foci as large as peas, not yet broken down. Cultures made by placing particles of these foci upon *agar* in tubes revealed the presence of Glanders bacilli. The horse was killed, and at the autopsy ulcers were found on the septum, and the lungs were affected in a manner characteristic of the disease. The author rightly claims that without the aid of bacteriology the disease could not have been determined during life.

In the course of our inoculation experiments on guinea-pigs, three submaxillary glands were examined and cultivations made.

In the first case the gland was as large as two hen's eggs. The gland substance was pale red. Cultures were made on *agar*, blood serum, and potato by cutting out small bits of the interior of the various lobes and rubbing these upon the culture medium, the surface of the gland being disinfected by scorching it. After the cultures had been made the gland was more thoroughly examined and a considerable number of yellowish-white spots as large as a pin's-head were found, representing plugs of pus lodged in cavities. It is highly probable that some of these were transferred to the culture tubes in the pieces cut out. The tubes remained sterile, however, excepting one containing micrococci.

A second gland taken from a horse killed and found glandered, was considerably swollen, the individual lobes as large as walnuts. The gland was placed in 5 per cent. carbolic acid for five minutes, then in $\frac{1}{10}$ per cent. mercuric chloride for one-half minute; finally sterile water was poured over it to remove the chloride.

The lobes were cut open with flamed knives and several cavities one-twelfth to one-eighth inch (2 to 3 millimeters) in diameter were found containing white, consistent cheesy masses. Potato and *agar* tubes inoculated with these masses remained sterile.

A third gland, which had been removed from a glandered colt at the autopsy, was examined and cultures made in the same way. The gland contained no caseous masses, and hence bits of tissue were cut out and placed on *agar* and potato tubes. Of five cultures all remained sterile but one. This contained a single colony not resembling the colonies of Glanders bacilli and made up of actively motile bacilli.

So far as these experiments go, they can not be said to favour the method of diagnosis by extirpation of the submaxillary glands unless the result is only considered decisive when the bacilli of Glanders have been actually found. They certainly can have little value when the result is negative.

REPORT ON ACTINOMYCOSIS BOVIS.*

BY PROFESSOR E. M. CROOKSHANK, M.B.

I.—Historical Introduction.

We cannot ascertain how long the various manifestations of Actinomycosis have existed in this country; but these affections were known for many years to veterinary surgeons under colloquial terms, and in some cases were included in the descriptions of other diseases. Since 1882, however, several morbid conditions have been recognised as the lesions of Actinomycosis, while others have only been shown to result from this disease in the course of the present inquiry. That they have nearly all been made the subject of study by practical veterinarians, is evidenced by the accounts which have been published in veterinary literature. I propose to draw attention to these accounts, from the earliest records which I have been able to find down to the present inquiry. I shall refer at some length to those of general interest, as well as to those which bear more immediately upon my own observations. In some cases it will be as well to go very fully into details, so that the descriptions themselves may give the reasons which I have for regarding them as cases of Actinomycosis. It is impossible to assert that the writers had in every case to deal with this disease, but I shall italicise statements which afford very strong evidence, and justify this conclusion so far as we can judge from mere descriptions. In relating the history of an outbreak in Norfolk, I shall describe the steps by which I was led to the discovery that "wens," "clyers," or "crewels" are local manifestations of Actinomycosis. The true nature of these tumours had been previously suggested, and they had been known to occur in association with Actinomycosis of the tongue, but the connection had never been established by microscopical examination. On the contrary, they were generally regarded as the result of a strumous or scrofulous diathesis. But all the cases I have examined I have proved to contain the ray-fungus. It is a curious fact, that a morbid condition which was the last to be recognised in this country as Actinomycosis, was also the very first manifestation of this disease, so far as I can ascertain, which attracted the attention of veterinarians.

1827-1839.—As early as 1833, "clyers" had been made the subject of study by Professor Dick of Edinburgh, who published in 1839 "An account of an investigation into the nature of certain tumours in cattle,"—*Veterinarian*,

* From the Annual Report of the Agricultural Department for 1888.

vol. 12, p. 382, 1839. He had received an account of the disease from Mr. Hood, the owner of a farm at Inver-Brora, in Sutherlandshire, who wrote to him as follows:—"I have had the farm 11 years, during which time I have had an annual loss by this disease; but till the summer of 1828 I had not above 6 or 8 attacked in a year. In that season I had about 20, and in the following year 36. I have often cured them by cutting out the excrescence; but that operation has become more difficult the last three years, owing to its being deeper in the neck; indeed, it is often at the very root of the tongue, and in one or two instances the tongue itself was affected. They are sometimes on other parts of the animal, namely, the flank, back, etc., but in nine cases out of ten they are in the throat. The cattle I keep are generally purchased at 18 months old, and I dispose of them in August or September following. I have got them from all parts of the counties of Sutherland, Ross, and Caithness, and find them indiscriminately attacked with it; and when I breed any at home, they are the most unfortunate, having last year lost 6 out of 7. The months of May, June, and July are the fatal months, though I have sometimes had a few attacked sooner. The manner in which they were kept in the winters of 1827-8 and 1828-9 was upon straw, night and morning, in a dry and well-sheltered fold-yard, and for several hours in the middle of the day they were put into a field where they got as many turnips as they could eat, from the end of October till the first week in May, when they were put to grass. The situation of the farm is cold, and exposed to severe gales of wind from the west; but the soil is particularly dry, being a sandy loam, and producing excellent artificial grass. Last year, I bought 14 cattle in the month of May, 9 of which were seized with the distemper; indeed, I find little difference in their being wintered on this farm or otherwise. I should state, however, that these 14 were in very poor condition when I purchased them. The cattle have at all times a full supply of water; in winter, that of which I sent a specimen to Mr. Lawson, which I believe you have seen; and in summer, the river Brora, of which all the cattle in the neighbourhood drink. An intelligent drover remarked to me last season, that he suspected I gave the cattle too many turnips, as small cattle did not thrive by being too much pampered. I have followed his suggestion so far as to give them less this winter, and shall wait the result. Upon the whole, I am of opinion that it is *something in the grass* that causes the complaint; but what that is I can form no idea. I may add, that some of my neighbours have occasionally a beast or two affected in the same way; the Marquis of Stafford had sometimes 8 or 10 in a season at Dunrobin, but since 1822 it has completely disappeared from thence."

In addition to this account of the disease, a medical practitioner in the neighbourhood supplied the following description:—"In the summer of 1828, my attention was directed to a number of young cattle who were affected with *encysted* or *honeyed* tumours, situated in the throat, at the superior angle of the lower jaw. When I first observed them they were superficially attached to the cellular membrane of that part, and of course were easily removed by excision (which is the only treatment I have found of the least use); but now they have assumed a more malignant appearance, being firmly attached to the root of the tongue and cartilages of the throat, so much so, as almost to render their removal impossible. The effects of the tumours are an immediate falling off in condition, and great oppression of breathing, and when the disease is allowed to take its course, the cattle generally die within four or five weeks after its commencement."

An eminent agriculturist also gave his views of this outbreak:—'My own opinion," he says, "is, that it is caused *by some insect*, and the only way to find a remedy is by a most minute and careful examination of the part to try

and find out what insect it is. Of course this is to be done both by cutting out the diseased part from the beast when alive, and also examination after death. Having found out what the insect is, the cattle might be removed to high ground, lea, or an open muir, while the insect was in the winged state. The common carrion fly and a few others do not continue to be injurious in the winged state longer than three or four weeks, and the cattle would only require to be that time removed from the pastures. Though I may be wrong in supposing it to arise from the bite of an insect, still it would be greatly for the good of the cattle to be shifted to high ground for some time during the heat of summer, as, on the return to lower pastures, they would find the grass fresh and free from the tainted smell which they much dislike in grass which has been trodden and breathed on by themselves. I would also strongly advise salt to be given as a thing which can do no harm; and if it be something in the blood, as it is vulgarly called, which occasions those tumours, it may be of great benefit. An ounce and a half to a beast of 35 stone (Dutch) per day is enough, and less, according to the size of the cattle. I think it might be useful to clip away all the hair as soon as the tumour appears, and foment three or four times a day with very warm water, using blanketing, or some such thing, and fomenting for twenty minutes each time. I would wet the place all over with little a laudanum. Let the cattle get plenty of good water at all times, and attention should be paid to the state of their bowels."

In spite of these and some other communications on the subject, Professor Dick was unable to ascertain satisfactorily the cause of this destructive disease, and he therefore resolved to visit the place in order to make a closer investigation. He requested to be informed when the disease made its re-appearance, and having received notice that two animals had become affected, he visited Sutherlandshire in 1832. On approaching Brora he carefully observed the character of the country, and thus described it: "When I had gradually emerged from the shaded and more sheltered parts, I had then before me a country of somewhat different aspect—a pretty extensive tract of flat ground, closed to the right by the sea, to the left by hills of considerable altitude, running in a south-west direction, and before me, hills extending from the north-east to the south-west,—the whole enclosing a triangular-like space almost a dead flat. The hills in front approaching each other formed Glen-Brora to the west, from which the river Brora runs into the sea at Brora. The farm of Inver-Brora stands nearly in the centre of this flat." The farm-steading was found to be good and commodious, the situation dry, soil light and dry, the water slightly inclined to a mossy tint, but sufficiently good. The grasses on the farm had been examined by an excellent practical botanist, and nothing unusual or noxious had been discovered, but still the disease continued to prevail amongst the cattle on the farm. One animal was killed to enable Professor Dick to make a minute examination, and in the other case an attempt was made during life to remove the tumours from the throat. On dissecting the first it was found that the tumours presented a somewhat malignant character, being what were "usually called medullary sarcomatous tumours," but these varied in their character. In some cases an abscess developed, which when laid open frequently healed up kindly, and the animal afterwards did well, while in other cases the tumours remained in an indolent state for a time and then increased in size without, however, proceeding to free suppuration, but continued to increase until by their bulk they interrupted respiration, prevented deglutition, and destroyed the animal by the continued irritation they kept up. The lymphatic glands of the throat seemed to be the parts most liable to be affected, but the disease occasionally attacked other parts of the body. In some cases the abscesses discharged pus for a time, then gradually fell

into an indolent state, the discharge becoming unhealthy, and sinuses forming; while in others the matter became partly absorbed, and the whole assumed a chronic character with the already mentioned "medullary-like appearance." (*To be continued.*)

ROYAL COLLEGE OF VETERINARY SURGEONS.

FELLOWSHIP DEGREE, 1890.

AN examination for the above degree was held in London on Tuesday, October 21st, when the following gentlemen were admitted Fellows of the Royal College of Veterinary Surgeons :—

Professor E. S. Shave, Royal Veterinary College, London.
H. C. Wilkie, Esq., Bodmin, Cornwall.
T. A. Huband, Esq., Cheltenham.
F. G. Ashley, Esq., Bath.

The Examiners were Dr. Fleming, C.B., Prof. Wm. Duguid, and J. Roalfe Cox, Esq.

ARTHUR W. HILL, Secretary.

NOTES ON DIPHTHERIA IN ANIMALS AND IN MAN.

BEING A SUMMARY OF AN INVESTIGATION CARRIED OUT DURING AN EPIDEMIC IN BUENOS AYRES.

BY JAMES T. R. DAVISON, M.D.EDIN.,

Late House-Physician to the Edinburgh Royal Infirmary.

DURING the last few years Diphtheria has taken a firm hold on the population of Buenos Ayres. It is the custom in this city to publish in the daily papers mortality tables showing the diseases which have proved fatal, and the houses where the deaths have taken place. With the object of finding out, if possible, the causes of this epidemic, I undertook an investigation, taking as a basis the deaths occurring during the first half-year of 1889. I examined the mortality tables, and by their means I was enabled to find 260 houses where patients had died from Diphtheria during those six months. I visited each of these houses, and obtained personal information as to the special conditions in which each house was placed. I will briefly relate the most important part of the information I have elicited during my enquiry.

The facts gathered enabled me to affirm that the great cause of the present epidemic of Diphtheria in Buenos Ayres is the presence of animals, especially hens and horses, in yards, without any pavement, or hardly paved. Most of the houses in Buenos Ayres have what are known as "patios." These are open spaces within the houses. Some houses have three or four of these "patios," and frequently, especially amongst the poorer classes, the back "patio" is not paved, and hens are kept on it. The soil of Buenos Ayres is of a very retentive character, consequently these unpaved "patios" enclosed, as they are, by walls, which obstruct a thorough ventilation, are highly favourable to the production of dampness. Hens which live on these damp soils become a prey to Diphtheria, and children who play in these back yards contract the disease from these hens.

Of the 260 houses which I examined I found that hens were kept in 145, and of the remaining houses hens were kept in houses immediately adjoining in 35 instances, the separation of the yard in some cases being so insignificant as to make the two houses a single one.

I found that 35 per cent. of those who died from Diphtheria lived in houses

where horses were kept, or in houses immediately adjoining stables. Mention may here be made of the statistics of some of the European armies with relation to Diphtheria mortality. In the French army there are three times as many deaths from this disease amongst cavalry as amongst infantry troops. The same holds good for Germany. Diphtheria is three times as fatal in the cavalry as in the infantry regiments, while in Hungary the disease prevails very little in the army, but where it does prevail it selects its victims chiefly from the cavalry regiments. I found that of the houses where diphtherial patients died, and where some of the following animals existed—horses, hens, pigeons—85 per cent. had back yards without any pavement, or with very imperfect ones.

Of the 260 houses examined, I found that in 205 horses, hens, or pigeons were kept either in the house itself, or in the house immediately adjoining.

I found out the following practical cases, pointing to the direct infection of children from hens affected with Diphtheria:—

1. In Corrientes Street, a child, two years of age, died in the month of January. The house had a single storey, and had a back yard without pavement. A few days before the child took ill two of the hens which were kept in the house had ulcers in the throat.

2. In California Street, two children, one two years old the other four, died in the month of March. The house was a lodging-house, and had a back yard without pavement. A few days before the children died two of the hens which were kept in the house died, having "made a strange noise with their throat" during their illness.

3. In Europe Street, a child, three years of age, died in the month of April. Lodging-house, with back yard, without pavement. A month before the child died the hens sickened with an "affection of the mouth."

4. In Salta Street, a child, nine years old, died in the month of April. House had a back yard, without pavement. Three weeks before the child died several of the hens died with "ulcers in the throat."

5. In Talcahuano Street, a child died from Diphtheria (all these cases that I am relating died from this disease). This child was in the habit of playing all day in the back yard, where the hens were kept. In those days when the child sickened, several hens died from an affection, where the "throat was swollen, and membranes were extracted from the nostrils."

6. In Jehallos Street two children died of Diphtheria in the month of May. Back yard without pavement. A month previous to the death of these children the hens suffered from ulcers in the throat.

7. In Belgrano Street, a girl sixteen years of age, died of Diphtheria. The yard was paved, but imperfectly so. A hen house was kept in the yard. A few days before the girl died two of the hens had suffered from ulcers in the throat.

8. In San Antonio Street there is a large lodging-house, where several children had died of Diphtheria at different times. There is a yard without pavement. The man in charge of this house informed me that it is a common thing for the hens kept there to suffer from ulcers in the throat.

9. A physician in Buenos Ayres lives in a two-storeyed house. On the ground floor a hen house is kept on one of the "patios." One day he saw one of his children playing amongst the hens, and reminding that he had once assisted at a fatal case contracted from a diphtherial hen, he called out to his child to come upstairs. Next day the child sickened with Diphtheria, and subsequently died. It was found that the hens at the time were suffering from ulcers in the throat.

These cases which I have selected would of themselves point strongly to the direct infection of children from hens and other animals; but, taken in conjunction with recent observations made in England and on the Continent,

they are a strong testimony to the truth of the theory which ascribes Diphtheria in animals to the presence of a damp soil, and Diphtheria in the human subject to contagion from animals so infected. I do not for a moment wish to state that Diphtheria in the human subject has no other origin than that just mentioned. It is, however, ascertained that Diphtheria in the human subject may be due to dampness, to the removal of mixed deposits of vegetable and animal matter after they have been in intimate union for some time, to infected milk, and lastly, but very rarely, to infected water.

Reviews.

Die Thierarztliche Hochschule zu Berlin, 1790-1890. By Dr. Schutz. (Berlin: Hirschwald. 1890.)

This is another of the Festival offerings prepared by the teachers of the Berlin Veterinary University, to commemorate the centenary of that famous school, two of which were noticed in the Journal for October. Professor Dr. Schutz, who is Rector of the Institution, and whose name is familiar to all those who are interested in general pathology and bacteriology, has prepared an elaborate history of the school from its foundation up to the present day, when it is recognised as perhaps the finest, most complete, and best organised of all the veterinary scholastic establishments in Europe—thanks to the initiative of Frederick the Great, and a succession of prescient governments. The historical portion of the work is divided into eight parts, each of which may be said to deal with an epoch in the existence of the school—some of these being long, others comparatively brief, though all are most interesting, and more especially the first epoch from June, 1790, to September, 1817. We learn that, so early as 1787, by direction of Count Lindenau, three young men were selected to be sent to study veterinary science and chemistry abroad. One of these, a licentiate in medicine—afterwards known as Professor Naumann—was despatched, along with a shoeing-smith, to Alfort; another, a surgeon—Professor Sick—went to the Veterinary School at Vienna—which had been only recently established; he was also accompanied by a horse shoer; while the third—an apothecary—Professor Ratzeburg, proceeded to Leipsic, in order to study chemistry and botany in relation to veterinary medicine.

Returning in due course to Berlin, these teachers had to await the erection of a suitable establishment. This was built in one of the largest and finest parks in the neighbourhood of the city, the land and buildings being paid for out of the Royal treasury, and the teachers maintained at the public expense. The various ordinances issued from time to time with regard to expansion of the establishment, increase of teachers, modifications in organisation, and rules and regulations pertaining to study and students, are given by Schutz in ample detail, together with notices of the various distinguished professors and their works.

The present organisation and working of the school is dealt with in

an instructive manner. The various professors and the subjects they teach; the division of the subjects according to the sessions; and all the minor details of the thorough tuitional courses, together with a description of the buildings and different departments, illustrated by two ground plans—constitute a work as engrossing as it is valuable to the student and the historian of veterinary medicine. For ourselves, we heartily thank Dr. Schutz for the intellectual treat he has afforded us in the perusal of a work which must have cost him much research and labour, and which is a worthy record of the great school over which he presides.

A Treatise on the Diseases of the Sheep; being a Manual of Ovine Pathology. By J. H. Steel, F.R.C.V.S., F.Z.S. (London: Longmans, Green, and Co. 1890.)

Mr. Steel is somewhat of a phenomenon in the matter of literary work, considering the climate in which he is located and his special duties. Books come from his hands as if they were produced by magic—though on perusing them one can easily see that, if not altogether the result of actual practical experience, they are at least the fruits of much handling of books and attentive reading. The last addition to the list of works to be credited to his pen is, like the others, of a semi-popular character—a book on the diseases of sheep, which may be advantageously referred to by very intelligent sheep-owners, and by students and veterinary surgeons who desire to know something of the maladies affecting that little-studied domestic animal. Hitherto, there have been only two works on the subject—one by Youatt, the other by W. C. Spooner, of Southampton, both somewhat out of date. Mr. Steel collects all the more recent information pertaining to ovine pathology, arranges it in a methodical manner, adding thereto his own observations, and in this way gives us a book much in advance of its predecessors, and one which can be highly recommended to veterinary surgeons and others, who may have to deal with sheep and their diseases.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Quarterly Meeting Of Council, Held October 1st, 1890.

Professor McCall, President, in the chair.

Present:—Dr. Fleming, Professors Williams, Walley, Axe, Penberthy, Pritchard; Messrs. Barford, Whittle, Briggs, J. Roalfe Cox, Kidd, Greaves, Mulvey, Cartledge, Walters, Hunting, Malcolm, Rutherford, Wragg, Trigger, Taylor, J. F. Simpson, Thatcher (Solicitor), and A. W. Hill (Secretary).

The Secretary read the notice convening the meeting.

Mr. Peter Taylor moved that the minutes of the last meeting be taken as read.

Dr. FLEMING seconded the motion, which was carried.

The SECRETARY announced a letter from Mr. Lambert, regretting his inability to attend the meeting.

Result of the Fitzwygram Prize Competition.

The SECRETARY announced the result of the competition for the Fitzwygram prizes. He stated that eight candidates competed for these prizes, two of whom withdrew during the theoretical examination held in London and Edinburgh on the 10th and 11th of June. The practical and *viva voce* was held in London on the 5th of July. The five candidates who were highest in the written portion proceeded to the further or practical portion of the examination. The following was the result:

Mr. J. Row, 1st prize, £50, Royal Veterinary College, London.
Mr. J. Peddie, 2nd prize, £30, Dick Veterinary College, Edinburgh.
Mr. J. H. Parker, 3rd prize, £20, New Veterinary College, Edinburgh.
Mr. W. P. Weston, Dick Veterinary College, Edinburgh.
Mr. C. Ward, New Veterinary College, Edinburgh.

Correspondence.

The SECRETARY then read the following letter from the Secretary of the Institute of Jamaica:

"Kingston, Jamaica, B. W. I.,
"Institute of Jamaica,
"*August 8th*, 1890.

"SIR,—The Board of Governors of this Institute desire particularly to improve the methods of horse-shoeing in this island. The forthcoming Exhibition at Kingston, Jamaica, to be held in 1891, seems a favourable opportunity for directing the attention of the people to this important art, so much neglected in Jamaica. I have thought that none would be so able to help us in attaining our aim as your important College, which has already done so much in England to ameliorate the condition of animals used in the service of mankind. Can you give us any information, or direct us to any source whence we may obtain help in forming a useful and striking exhibit illustrating the most improved methods in modern farriery? Your courtesy and kindness will be much appreciated by the Board of Governors.

"I am, sir, yours faithfully,
"JAMES D. FORD, *Secretary*.

"A. W. Hill, Esq.,
"Secretary R. C. V. S., London."

Dr. FLEMING moved that the subject be referred to the Joint Committee of the Farriers' Company, and acknowledged in the meantime.

Mr. P. TAYLOR seconded the motion, which was agreed to.

Presentations to the Library.

The SECRETARY announced the following presentations:—From the Board of Agriculture, the Annual Report of the Army Veterinary Department, 1889, with Appendix; from the Editor of the *Veterinary Record*, a copy of Volume II, 1889-90.

Mr. CARTLEDGE moved a vote of thanks to the respective donors.

Mr. WALTERS seconded the motion, which was carried.

Presentations to the Museum.

THE SECRETARY announced the presentation, by Professor Axe, of a number of parasitical and anatomical specimens, numbering in all between two and three hundred.

Mr. BARFORD moved a vote of thanks to Professor Axe for his gift.

Professor WILLIAMS seconded the motion, which was carried.

Professor AXE, in acknowledgment, said that he was indebted to the Museum Committee for permitting him to take liberties, which otherwise he should not have taken, in obtaining mountings, &c., for his specimens. He desired to express his indebtedness for the indulgence shown him.

Finance Committee.

The SECRETARY read the report of the Finance Committee.

The PRESIDENT moved the reception of the report, which was seconded by Mr. P. TAYLOR, and carried.

Mr. WRAGG moved its adoption.

Mr. P. TAYLOR seconded the motion, which was carried.

The SECRETARY thanked the members for the honorarium presented to him, which he need not say was highly appreciated.

Mr. RUTHERFORD said that as to the banking business, the plan at present adopted by the assembled Board was to have an account in the name of the College with the Union Bank of Scotland. He paid the cheques in the name of the Royal College, and signed the cheques for the Royal College, and not in his name at all. He had pointed out for a long time that it was not business-like for the Royal College not to have an ascertained bank in Scotland, because his agent had told him that in the event of a secretary so choosing, there might be a loophole for something like larceny of the College funds. Every halfpenny that he received was paid into the Union Bank of Scotland, and all moneys paid out of the bank were signed by him in the name of the College itself. He should desire that the Union Bank be named as being the agent for the College in Scotland in banking matters.

Registration Committee.

The SECRETARY read the report.

Dr. FLEMING moved its adoption, which was seconded by Mr. P. TAYLOR.

Mr. WHITTLE said he should like to see every committee have its independent chairman, and that chairman to be responsible for the work of the committee.

Professor AXE said that it had been suggested that at the last meeting a resolution was passed to the effect that the chairman of each committee should read the report of his committee. He should like to know if such a resolution had been passed. He was more particularly concerned in connection with regularity and order from the fact that only recently the College decided that in reference to the preliminary examinations a certain standard should be adopted. A notice had been received by the College at Camden Town to the effect that only the second-class certificate would be received, and they in consequence had altered their regulations to that effect. Subsequently the Royal College determined that they would accept the third-class certificate, but they at Camden Town declined to alter their regulations. They had a mind of their own, if the Royal College of Veterinary Surgeons had not. Their declining to alter their regulations gave rise to a considerable loss on their part. He, therefore, would like to know if any resolution had been passed by the Council to the effect that the chairmen of committees should read the report of their respective committees.

The SECRETARY said that the wording of the resolution was to the effect that each committee should choose a vice-president and reporter, who should draw up the report and read it at the Council meeting.

Mr. WHITTLE said that in ninety-nine cases out of every hundred it would be found that the Secretary read all reports.

The matter then dropped.

Mr. THATCHER (the Solicitor) said he had to request that some gentleman would move, and another second, that the seal of the College be affixed to the different authorities to prosecute.

Dr. FLEMING moved that the seal of the College be affixed to authorities to prosecute.

Mr. P. TAYLOR seconded the motion, which was agreed to.

The seal of the College was then affixed.

General Purposes Committee.

Dr. FLEMING read the report of this Committee.

Dr. FLEMING moved the reception of the report.

Mr. J. F. SIMPSON seconded the motion, which was carried.

Mr. WHITTLE said that it occurred to him that if the weather broke, all the effects of any improvements would be lost sight of next Spring. He therefore proposed that they should postpone the whole thing until next Spring, and then have the entire building done up against the next annual meeting.

Mr. HUNTING thought that the work required doing very badly. He therefore proposed that the report be adopted.

Mr. J. F. SIMPSON seconded the resolution, which was agreed to.

Honorary Associates.

Dr. FLEMING proposed as an Honorary Associate the name of Professor Neumann, of Toulouse. He said they had just sustained a loss by the death of Professor Touissant. Professor Neumann occupied a very high position in the veterinary world in France, and also on the Continent generally, but what especially entitled him to that honour was the fact that he had produced a work on animal parasites which was second to none. He therefore moved that Professor Neumann be elected by the Council as an Honorary Associate of the College. He also begged to propose the name of Mr. Kendall, of Melbourne, who had been some years in Australia—a man in every way worthy to represent the veterinary profession there. Mr. Kendall had just opened a school, and had taken the lead of all schools in English-speaking countries in showing the way with regard to an advanced curriculum. By way of encouragement, and as a matter of wisdom, he should nominate Mr. Kendall to the position of Honorary Associate.

The motion was seconded and carried unanimously.

Professor PENBERTHY proposed the name of M. Nocard, of Alfort, near Paris, as an Honorary Associate of the College. He said he was a man who occupied a high position in the veterinary profession on the Continent.

Professor WALLEY seconded the resolution, which was agreed to.

Resolution as to Bursary.

Professor WALLEY asked what had become of the question with reference to the Royal College of Veterinary Surgeons establishing a bursary to assist deserving young men to go on with their education. It had been brought forward in the regular way and passed over to a committee, and he himself had heard no more about it since.

The SECRETARY said it had been referred by the committee to the Council at a meeting at which Professor Walley should be present.

Professor WALLEY asked for the matter to be brought before the Finance Committee as to whether the funds of the College would allow of it.

The SECRETARY said that was a subject which was brought before the Finance Committee.

Dr. FLEMING said that he remembered that the committee was in grave doubts as to how it could be worked, and they could not go on until Professor Walley should be present.

Professor WALLEY said he should be happy to give any explanation. He thought in this country they were far behind all other countries in the matter of assisting young men to go on and perfect themselves in the work of their lives. In this country there was no fund, or bursary, or anything of the kind to assist them to improve themselves. It had occurred to him that the College could very well afford to give a bursary annually, to be competed for by the students. He did not want to make it a question of schools at all, but a question of improving the profession. There were many young men who had a taste for scientific work in pathological research and biology, but they had not the means to go on and improve themselves. At present it was impossible to find more than half-a-dozen men in the profession who could, in the true sense of the word, be called good pathologists or biologists. That he thought was a standing disgrace to the profession. We have Sir Frederick Fitzwygram's excellent prizes, but they are given to men who are most competent in all the subjects of the curriculum; they are not given on any such grounds as those he was advocating. He would therefore propose that the College gave annually a bursary of seventy-five guineas to the most deserving student of the year—that was to the student who should pass the best examination in pathological subjects, with the object of enabling him to go wherever he liked to improve himself in the work. Questions, no doubt, would arise as to the working of the bursary, but that was a mere matter of detail. He only wanted the principle of the thing recognised. There would also be the question of by what designation it should be known. It might very well be designated "Bursary of the Royal College of Veterinary Surgeons;" but it had occurred to him that they might follow the example of other corporations, and in giving the bursary, might perpetuate the name or names of some one who had gone from amongst them, and whose name deserved perpetuity. If that view were held, he should propose that the bursary be called the "Dray-Robertson Bursary." He did not think they could perpetuate the names of two men who had done more during their lives for the Royal College of Veterinary Surgeons, and for the profession generally. He should therefore propose, "That this College offer a bursary of seventy-five guineas a year to the best student of the year, to enable him to prosecute his pathological studies."

Mr. J. E. SIMPSON thought that the establishment of such an important matter as a bursary could not be discussed without notice that such a matter was coming before the Council. He thought that many members of the Council would prefer establishing scholarships to a bursary. He moved that it be placed upon the agenda for the next Council meeting.

Professor WALLEY said that Mr. Simpson must be aware that this question had been before the Council for twelve months. It was considered by a meeting of the Council and handed over to the Finance Committee to see whether the finances would allow of it; and they were now just in the same position of not knowing what they were doing.

Dr. FLEMING seconded Professor Walley's resolution.

Mr. P. TAYLOR proposed as an amendment that the matter should again be placed before the Finance Committee.

Mr. WRAGG seconded the motion.

Professor WALLEY said it had just been suggested to him by Mr. Hunting that another body was considering the desirability of handing over funds for a similar purpose to the College. If that was the case he would willingly withdraw his resolution, and propose that a select committee be appointed to take the matter into consideration and report at the next Council meeting.

Mr. P. TAYLOR withdrew his amendment.

Mr. J. F. SIMPSON also withdrew his amendment.

Mr. P. TAYLOR then seconded Professor Walley's amended resolution, which was agreed to.

Mr. HUNTING said that there was a motion now before the Council of the Central Veterinary Medical Society, to offer the Royal College of Veterinary Surgeons £50 by way of establishing the nucleus of a prize fund, in the hope that other societies would add to it, and that the College would also add to it.

The Committee was then constituted as follows:—Professors McCall, Pritchard, Axe, Williams, Walley, and Brown; General Sir F. Fitzwygram, Dr. Fleming, Sir H. Simpson, Messrs. Wragg, Walters, and Hunting.

Professor WALLEY then gave notice of his intention to move at the next Council meeting the following resolutions:

"1. That the present period of study be extended by the addition of at least three terms.

"2. That the examination in materia medica be rendered more strict than it is at present, and that it shall include practical pharmacy.

"That the marks to be obtained by students in the matriculation examination shall be 50 per cent. in reading and in writing to dictation, and 30 per cent. in all other subjects."

In explanation of his resolutions he said that he felt the time had now come when the curriculum should be extended. Some time ago it was extended to three terms, but as a teacher he felt that, notwithstanding that fact, it still required further extension. Teachers felt that the time was insufficient for the whole of the curriculum to be properly gone through by the students at present in the colleges, more particularly in reference to the last examination. With reference to the second head of the resolution it was a matter of great importance that the examinations in materia medica should be rendered more strict than at present. They were all aware that when the new regulations were made with reference to examinations, materia medica was put in a very secondary position; indeed it had been practically shelved. The result of that had been that many men would not at present take the trouble to get it up. He thought that no man ought to leave a college until he could do something in practical pharmacy. In reference to the marks of the students, he had brought a resolution forward to the effect that the number of marks to be obtained in each subject should be fifty, and that resolution had been carried. He had, however, been told by almost everybody afterwards, that 50 per cent. of marks in every subject was too high. He, however, thought that unless a man could obtain 50 per cent. of marks in reading and writing from dictation, he had no right in the profession. He desired that this matter should be settled as early as possible.

Mr. TRIGGER moved that the time allowed for the practical examination to the students be extended from fifteen minutes to thirty minutes.

Professor WALLEY said that that would come on with his motion. He simply gave notice of his intention to move that the length of time for the medical examinations be extended.

Mr. HUNTING then moved the following resolution:

"That this Council, recognising the resolution carried at last annual meeting, and the wishes of a large section of the profession, is of opinion that a committee should be appointed to thoroughly consider the subject of a new charter to embody and define the changes required, and to report to the Council."

Mr. MULVEY seconded the resolution. He thought that as the question had been so fully entered into before, it was hardly necessary to discuss it again on that occasion.

Mr. J. F. SIMPSON said he desired to support the resolution to some extent, but he could not accept the words "recognising the resolution carried at the last annual meeting." He thought that that resolution carried at the annual meeting had nothing whatever to do with the Council, as that meeting had been called for the specific purpose of receiving the annual report. He was of opinion that the matter should be referred to the proper committee, viz., the Parliamentary Committee, which had been appointed to consider matters of the kind.

Mr. KIDD said it was his intention to support Mr. Hunting's motion.

Mr. J. F. SIMPSON proposed as an amendment that the matter should be referred to the Parliamentary Committee.

Mr. WALTERS seconded the motion.

Mr. HUNTING objected, remarking that this was no amendment.

The PRESIDENT upheld the objection.

Mr. J. F. SIMPSON said he was anxious that the matter should be discussed.

Mr. WHITTLE asked Mr. Hunting if he would accept the whole Council as the committee.

Mr. HUNTING assented. He then amended his resolution as follows:—

"That this Council, recognising the resolution carried at the last annual meeting, and the wishes of a large section of the profession, is of opinion that a committee should be appointed to thoroughly consider the subject of a new Charter to embody and define the change required, and to report to the Council, and that the whole Council be the committee appointed.

Mr. WHITTLE seconded the resolution as amended, and it was agreed to, thirteen voting in its favour, and one against.

The following suggestions by Mr. J. ROALFE COX were then considered as a resolution:

"That the following suggestions be considered by the Council, and amended or added to as may be agreed, and in their approved form be presented as a recommendation from the Royal College of Veterinary Surgeons, to be adopted and acted on by the Worshipful Company of Farriers:

"1. That each candidate for registration shall be required to furnish testimonials from his employer or employers, during the preceding twelve months, that he has been sober, and has not caused lameness or injury to a horse or other animal in shoeing during such period.

"2 That the examination of a candidate for registration shall embrace an examination held at a forge, in making, fitting, and putting on an appropriate shoe to a selected foot.

"3. That every shoeing-smith be required to possess a licence granted by the Worshipful Company of Farriers, and the same to be renewed annually, a small fee to be paid for the licence and for its renewal.

"4. The licence so provided to be a printed form, to be signed by each employer during the year of its operation, and recording the date of commencing and terminating each period of service, and the reason for leaving, and also stating whether any and what injury has been caused by the licensee in shoeing any horse or other animal during the time of each service.

"5. In the event of a proprietor of a forge being made liable and caused to pay damages for any injury to a horse or other animal, it shall be held as evidence that the shoeing smith who had caused such injury is guilty of culpable carelessness or negligence amounting to cruelty, and the said shoeing-smith shall be liable to prosecution accordingly by the Royal Society for the Prevention of Cruelty to Animals."

DR. FLEMING thought that Mr. Roalfe Cox should withdraw his suggestions, as the Joint Committee of the Farriers' Company were at present considering the matter.

Mr. ROALFE COX said he would cheerfully accede to the suggestion of Dr. Fleming; and the matter then dropped.

On the motion of Mr. WHITTLE, seconded by Mr. KIDD, a vote of thanks was passed to the President for his conduct in the chair.

ROYAL VETERINARY COLLEGE.

OPENING OF THE SESSION, OCTOBER 1ST, 1890.

INTRODUCTORY ADDRESS BY PROFESSOR PRITCHARD.

GENERAL SIR FREDK. FITZWYGRAM, Bart., M.P., in the chair.

Present.—Lord Fortescue, Sir Henry Simpson; Professors Brown, C.B., Axe, McCall, Simonds, J.P. (late Principal), Williams, Walley, Shave, Power, J. Penberthy, Macqueen, Bayne; Dr. Fleming, C.B.; Messrs. T. Sangster, H. Olver, and Richard A. N. Powys (Secretary).

The appearance of Professor Pritchard on the platform was the signal for loud and long-sustained applause. Silence having been restored,

The CHAIRMAN, who was received with loud cheers, said: Gentlemen, it is now my pleasing duty to call upon Professor Pritchard to deliver his introductory address.

Professor PRITCHARD, who upon rising was received with loud cheers, said:

Sir Frederick, My Lord, and Gentlemen,—The address which inaugurates the scholastic session of a medical institution, in my opinion—and it is one which I expressed when delivering the opening lecture nineteen years since—should be one free from abtruse scientific subject-matter, clear of all political topics, and everything in fact but the affairs which should be engrossing the minds of those who have selected the study of the curriculum of that particular institution upon which they intend to build up a future career. In other words, an attempt at a plain, practical oration, containing useful advice to the students, calculated to be of assistance to them in the prosecution of their studies; to encourage them to battle with and to overcome difficulties, which at first may appear almost insurmountable, and to help them in after-life to become, if not distinguished, at least useful and creditable citizens.

I shall not be able to perform this task with the completeness I should like; but such is the one which I have set myself, and I trust to be able so to perform it as to enable you, my young friends, to glean something from my remarks that will give birth to such good resolves as may eventually enable you to succeed, even beyond your present hopeful expectations. I therefore ask you to bear with me in my endeavour, and subsequently to carefully weigh over in your minds the advice which I am about to offer.

You are entering upon a profession the following of which, if not so lucrative as some other callings in life, is second to none in its beauty of study; to none higher in its aims and attainments, more laudable in its pursuits, or more creditable to its followers. The educated Veterinary Surgeon, although frequently derogatorily alluded to by those who should know better as "the vet," can lay claim to as fine a feeling, as high thought, as noble aspirations, and as large a sphere of usefulness as any other member of the community. This being so, you have a noble goal ahead; and nothing should be wanting on your part to secure to you the success of reaching it. Now, let us see what are the opportunities which are within your grasp to enable you to qualify yourself to obtain this honourable position, and with a view to impress upon your minds the full value of those opportunities. I do not think I can do better than to carry your minds back for a few minutes

to the period when I was a pupil in this institution, now more than thirty years past, and briefly detail to you the circumstances under which the student of that day had to secure the necessary proficiency to command a successful audience from his examiners, and to fit himself for the patronage of his future employers; and then to compare that state of things with what now exists. At that period the institution of a matriculation examination had not taken place; then, more frequently than one cares to recollect, the embryo Veterinary Surgeon's education was painfully meagre, and he but very ill-fitted for the teaching dealt out to him—a disadvantage, the enormity of which I need not dwell upon. The teaching staff consisted of three professors, an assistant professor, and a demonstrator of anatomy; all men well selected for their appointments, gifted with rare abilities, with an ardent love for their calling, and an amount of zest for their duties which commanded much admiration and every respect; men who live well in the memories of their numerous pupils, and the fruits of whose labours will live long after them. But when we think of the amount of matter embraced in the different items of the curriculum with which they had to deal, one conclusion only can be arrived at—that, however good and great the ability, the energy, the labour, and the desire of these men to fully and completely accomplish the task to which they were devoted, it must of necessity have been beyond them. A passing thought on the class-room or theatre, for there was only one: it was so small that extra movable seats had to be placed around the lecture table, encroaching inconveniently upon the lecturer; and even with this arrangement it was overcrowded, and consequently very ill-fitted for an audience whose attention should be undivided. The dissecting room, which should be one of the best appointed parts of the school, was a long, narrow, low-roofed, badly floored, miserable-looking place; fitted with a few rough tables and forms, the general appearance of the whole arrangement of which was exceedingly well calculated to rob the aspirant to anatomical honours of at least half of his good intention to have an afternoon's instructive dissection immediately upon his entrance. There was no chemical laboratory, either for the use of the professor of chemistry or for the pupils, to carry on practical work in. The pharmacy was a small room set aside for containing the drugs needed for the treatment of patients in the infirmary, and was only entered occasionally by a pupil, whose visit was more out of curiosity than anything else. Indeed, there was only one other room, a small one set aside for the use of the students, which was designated the pupils' room, and which was intended to serve for reading and writing in, but for which purposes afforded little or no accommodation, and which was more frequently used as a retreat by the lazy, or for depositing coats, parcels, and the like in. The teaching in the theatre consisted of three lectures daily, Saturday excepted, when there was one only; and an examination on chemistry. The professor on duty usually made a daily visit around the well-filled infirmary, when those who chose to attend him had an opportunity of hearing something of the nature of the cases and the instructions given as to the treatment of them, varied occasionally by a horse being seen out with a view to determine the seat of lameness, or whether the treatment adopted was having the desired effect. Be it said to the credit of the students, such professor was usually numerously attended. But this constituted the whole of the chemical teaching. There were very good opportunities for seeing horses examined as to soundness, as large numbers were sent to the College for that purpose; but very frequently such examinations took place without the students, who happened to be present, learning the opinion of the professor who carried out the examination. All operations were performed by members of the staff, clinical clerks were selected from the class weekly, but the casting and securing of the animals to be operated upon was always performed by the

grooms, and all medicines were administered by the head groom. A student was never so much as requested to put a bandage on a horse's leg, consequently few of them knew how to do it. Each student was expected to dissect a certain number of subjects during the session, which dissections, considering the facilities provided, were on the whole well carried out. No practical instruction in shoeing was given. With the exception of the Coleman prizes, none were offered for competition to the general class; and no books were provided for the students, excepting those who had joined the Veterinary Medical Association. Since that day Veterinary literature has been much added to, and as an aid to study is ten times more valuable.

Now, gentlemen, as many as I see around can testify, I have sketched you no exaggerated picture, nor have I told you these things with any feeling of finding fault with the manner in which the institution was managed in that day. At that time the College was, comparatively speaking, young, and had had much up-hill work to contend with; and if you knew much of its early difficulties and struggles you would think, as I do, that no mean credit is due to those whose energy and perseverance resulted in bringing it to its then existing proficiency. I will now for a few minutes compare the state of things of 1860 with those of 1890. Such a standard of matriculation examinations has been established as enables the pupil to easily grasp all that is taught, and possesses him with other immense advantages. The period of study has been much extended, and instead of the same subjects being dealt with each session, as heretofore, every term has its work, the pupils divided into classes "A," "B," and "C," having to make themselves efficient in one set of subjects before passing on to cope with others. The teaching staff has been increased no less than threefold, and the appliances wherewith to carry out their work of instruction very considerably improved and added to. The theatre, lecture, and class-rooms have been increased in size and trebled in number, and at the present time even these are being magnificently added to. Of these additions I cannot speak too highly or you think of too well. The dissecting-room, which for some years past was in every respect a vast improvement on the original one, has been considerably extended, and is now equal, if not superior, to anything of the kind in this country. A room is being fitted up for bacteriological research; a new row of buildings is in course of erection over the site of the ride, in which is a large lecture-theatre capable of accommodating comfortably over 300 students; a museum of much larger dimensions than the present one, and an extensive reading-room and library with other rooms; besides which one of the quadrangles has been covered in with glass to afford facilities for surgical and other practical teaching. A professor's chemical laboratory, with one for students, and a large pharmacy have also been erected. With reference to the number of lectures, demonstrations, and tutorial teachings, I am sure that no student can complain of any lack of them, for, should he be so inclined, he could be in attendance at one or other of them almost any hour of the day. The examinations of horses as to soundness, and the cases of disease in the infirmary, which now are not only those affecting horses and dogs as heretofore, but include those to which oxen, sheep, and swine are the subjects of, are well utilised as means of instruction. The art of shoeing is practically as well as theoretically taught. You are permitted to cast and secure horses for operations, to compound and administer medicine to patients. You are practically taught to bandage, dress, and otherwise treat wounds; and more valuable than all, you are, by an arrangement made by the governing body, which allows of the animals of the needy being treated at low rates, given the golden opportunity of being trusted with, and made responsible for, the treatment of the subject, than which nothing teaches better. In addition to the greater amount

of information offered to you, the increased facility for acquiring knowledge and the improved status which you must necessarily occupy as a consequence of your learning, as further inducement held out for your encouragement, are certificates of distinction, medals, scholarships, exhibitions, and other awards, the like of which my *confrères* had no opportunity to compete for.

I have thus shortly offered you a glance of the conditions under which the student of thirty years ago entered upon his scholastic duties, and compare it with your own of to-day. How great the difference, and how much more advantageous are the circumstances under which you enter upon your study than he did! This being so—and he succeeded in not only obtaining his diploma, but subsequently creditably practising his profession, even in some instances so creditably as "to stand apart among medallic men"—what possible excuse for failure can be suggested for you? I cannot conceive the slightest tenable ground for any, always providing your health is good. Perhaps I can anticipate the thoughts of some present, and fancy that crossing their minds at this moment may be some similar notion to this, "But nothing like so much was expected of the men of your day: our curriculum is much more extended, and our examination is more severe than yours was." Part of this is true possibly. Your curriculum is increased, a point obtained not one hour earlier than it was absolutely necessary—and one which you must be slow to see the advantages of unless you hail it with delight. True, you have more work to do, as true, you have more time to do it in. Again, if the subjects for the study of which you are answerable to the examiners are more numerous, you have instead of one, three—I may say four—separate periods to give proof of your having mastered them. This must render the test more easy of withstanding. Whether this be wise legislation or not is a question I cannot speak of now. That more is expected of you, or that your examination is more severe, so far as the curriculum of my day reached, I do not for a moment accept, and I say this from a fairly good double stand-point—a candidate for a diploma in 1860, and an examiner in 1890. I fearlessly assert that on the subjects of the curriculum of the earlier day the questions were quite as potent as those of the present; and whereas the examiner's table is loaded with specimens calculated and intended to prompt and encourage the student, the only aid he then met beyond the urbanity of his examiner, which I am always pleased to testify to, was half a tumbler of cold water. Now, let me advise you, with the utmost desire for your welfare, to dismiss all such, which I shall call nonsense, from your minds, and to urge you at once to determine to make the most of the many opportunities that will surround you. Your teachers, whose feelings, I can easily realise, have but one desire—your success; their duties are very arduous, and their anxiety constant, and consequently very great. It is in your power to lessen them, and to increase their zest more than you think, simply by unmistakably showing them that you are hard at work yourself; while an opposite demeanour on your part robs them of energy, and converts their work into drudgery. I would suggest to you not to make a pet of any one subject of your curriculum to the neglect of others; under any circumstances this is injudicious. Some item of study is certain to be more agreeable to your taste than another; rather would I advise you to give a little more time to the one disliked than to shun it. You may take it for granted all the subjects are necessary, or they would not have been introduced. What you have mastered, so far as your examination for the diploma necessitates, do not allow to escape you. Of all I have said, or shall say to you to-day, this, in my opinion, is the sentence to which you should attach most value. I say this because I know that to let slip important knowledge acquired at College is absolutely fatal to subsequently taking any position above the common run; and I also say

it because I cannot but know that it is a mistake young men—I hesitate to say how great a percentage of—make, and unfortunately commence to make it even before the close of their College career. I am speaking now mainly from experience of the men who present themselves before us at the class "C" examination. How often do we find that so soon as the question put necessitates an anatomical knowledge to impart the answer the man is at fault? The reason is obvious. If this retention of learning is necessary to enable you to pass your final examination, how much more necessary must it be for you in your subsequent career. How are you to judge of diseased limbs and viscera if you have forgotten what appertains to them in their healthy state? You may know too little of diseased functions and organs, but if you are to succeed you cannot be too well acquainted with the healthy; if you are well grounded in the former, a little careful observation, and you are certain to acquire the latter. You will necessarily obtain much information from your study of books, and it would be superfluous for me to advise you to work well with them. I would, however, venture upon one hint with regard to them. However good they may be, do not let them occupy you for too long a time together. The mind, however great it may be, is not equal to grasping properly a large amount of matter at one time. Reading for five hours at a sitting, as some pupils essay to do, is a mistake, the brain becomes confused, and nothing is properly retained. It is not only necessary to read, but to "mark, learn, and inwardly digest" what you do read. I would therefore rather recommend "small doses frequently repeated." I must not, however, dwell upon any particular way of attaining the information you need; have recourse to them all, use them all, and use them in a way that will insure your reaping from them their utmost help, never losing sight of the fact that, however good they may be, they are only means of assistance in the prosecution of the work which must necessarily be done by yourselves. There will be among your number some who will rapidly acquire knowledge. I have known many such. If properly utilised this is a gift of no mean order, but let me put you on your guard; learning so quickly obtained is frequently flighty, and commonly fails you at the necessary time. Again, your acquaintance that you possess the gift frequently makes it a dangerous companion by inducing you to learn only what you may deem sufficient, and causing indolence, procrastination, neglect, and other carelessness. No! If you realise that you can appropriate knowledge rapidly, let it be an incentive to learn soundly, and an aspiration to collect a large store. There are others among you who will experience the reverse of what I have been describing; *you* have to prosecute double the amount of study that you notice the other man has to keep pace with him, and you are inclined to conclude that your talents are scarcely equal to the task you have set yourself. I would say to you: "Be not discouraged; unremitting and indefatigable attention has often succeeded, and assuredly will again result in cultivating what at first appeared to be a slender faculty into a genius. Perseverance, you will find, will gradually lessen your difficulties, and that which you succeed in gaining you will with ease successfully retain."

I hope it is not so, but there may be one among you whose soul is not in the work, who has entered the College without fairly considering what he was undertaking, and who from some circumstance or another cares not whether he even obtains his diploma. To him I would with all kindness, but seriousness say: "Go away! You are wasting not only your own time, but that of your teachers and of your fellow pupils." You will not hesitate to take this advice, and turn your attention to some other calling in life more congenial to your tastes, if you think for a moment of the baneful influence your example will have upon those around you, although you are but one among the throng; every one has learned the trick of imita-

tion, and your manner is pretty certain to be copied by some who, without you, would probably have become industrious and creditable students. In your daily communication with each other, create a spirit of rivalry; but let that emulation be gentlemanly, honest, healthy, and entirely void of ill-feeling. Endeavour to teach each other, for there are few surer ways of increasing your own amount of learning, and such occupation is fraught with pleasure. This brings me to say a word about the Veterinary Medical Association. I am glad to know that it has risen again like the phœnix from its ashes, and promises to be as valuable, if not more so, to the existing and future students as it has been to past. I would strongly advise you to enrol yourselves among its members, not with a view simply to become candidates for its prizes, to have recourse to its library, or to be a looker-on at its meetings, but to enter fully and boldly into the discussions which take place at its gatherings. On the part of some of you this may require a little courage at first. You are not all born orators, but you may all learn by practice to speak fairly—an advantage of no mean order—and therefore I again counsel you to join its ranks. I ask your indulgence to express a few sentences on behalf of the animals which will come under your care and treatment; either here or hereafter; never let it escape you that they are all as sensible to pain as yourselves. This being so, let me entreat you in all your doings with them to temper your judgment with mercy. I am not thinking of such remnants of barbarism as docking and nicking horses, dishorning cattle, and such like operations, which, if I may say so without wounding the sensory systems of some individuals, in my opinion no scientifically educated man should allow himself to be associated with. It is not of this, but of the dealings with animals which of a necessity you have to carry out. Armed with first-class ability, and guided by the most humane feeling, you will frequently be obliged to perform painful operations. I cannot but feel that far too frequently, probably more from want of thought than anything else, an unnecessary amount of pain is inflicted by us. When operating, let us recollect that the longer our patient is kept under restraint the more pain we are inflicting; that two cuts with the knife where one should do, is causing double anguish. Let us attempt to realise when unnerving, that every twinge to the nerve produces as much agony as drawing a tooth from one's own jaw. Again, with regard to twitching, gagging, etc., how often comes the order, "Put the twitch on," without a passing thought of the intense pain such an order will give rise to. I am not advocating careless and unsafe handling of your patient, I have had too much experience to favour any such modes of procedure; but even in the administration of medicines, dressing of wounds, and the nursing, let humanity be your attendant.

I should be forgetting myself if I closed this address without offering my warmest thanks to the many visitors I notice who have honoured this meeting with their presence to-day, some of whom have travelled long distances to do so. I know that such patronage stimulates the energies of the teachers, and it must have a beneficial effect upon the class. Therefore I would thank them also on your behalf.

Gentlemen, it seems but a brief space since this week in 1858 I then, like one of yourselves, occupied a seat in the theatre of the College, and listened to an eloquent opening address by the late Professor Spooner. I then little thought that one day a similar duty would devolve upon me. A few more short years will find you in our places, when the profession, bear in mind, will not be what we left it for you, but what you have made it; its advance or decline will be your reward or your disgrace. Let me implore you, then, on the part of the institution, for your own credit, for the sake of your friends, and for the welfare of your adopted profession, while yet it is morning with you, to lose no opportunity which can assist you in obtaining your passport with

"very great credit," and having done this let your watchword be "Onward! onward! onward! for science and for honour!"

The CHAIRMAN: It is now my duty—and I need not say it is a very pleasing duty—to propose a very warm and cordial vote of thanks to Professor Pritchard. I am sure you have appreciated the thoroughly sound and practical address he has given to you, and if you follow the excellent advice which he has given you it should prove of great benefit to you in after-life. I hope you will follow it. I beg to propose a very hearty vote of thanks to Professor Pritchard for his introductory address.

Professor PRITCHARD: Mr. Chairman, my lord, and gentlemen,—I am really very much obliged to you for the hearty vote of thanks which has been so kindly proposed by you, Sir Frederick, and which has been received so warmly by yourselves. I will take this opportunity of thanking the authorities of the College for affording me the opportunity of appearing in the position of teacher—or rather lecturer—an honour which I most fully appreciate. If I have done what the authorities of the institution have considered sufficient, and if I have said one little thing which may be carried away by you, and which may be of benefit to you hereafter, I certainly do not begrudge the little thought that the composition of the lecture caused me. I thank you.

Professor AXE: Mr. Chairman, my lord, and gentlemen,—The proceedings of this day would be rendered very incomplete if we were not to call attention to the names of those gentlemen who during the past session have distinguished themselves by the attainment of honours and of prizes. I need hardly say that, like all other kindred institutions, the Royal Veterinary College seeks to give encouragement to those by offering the greatest rewards for the greatest exertion the pupils may devote in the subjects of their study. I must say that during the past session the papers which have been submitted by the teachers of the College have perhaps been of greater value, having reached a higher intellectual mark than any papers which I remember to have read during the whole course of my connection with this institution. Now, I refer this extra quality on the part of these papers to the fact that in the early period of last session we adopted a system which has proved eminently satisfactory. It was that of adopting periodical examinations—monthly examinations—in the several classes. Now, I have had an opportunity of reading large numbers of papers from time to time which have been produced by students in class "C," and I must accord to them the credit of having afforded us actually, in some instances, quite a literary treat; for the construction of those papers shows a considerable amount of intellectual ability in the way the subjects are dealt with from a scientific standpoint—that is to say, from the point of medicine were of a very high order. While we must admit, therefore, that though perhaps but a small portion of our students attained to that high order of practical information which we could desire, still we do seem at any rate to be making very encouraging progress in the theoretical part of the training of our students, and we have, as Professor Pritchard has indicated, to thank them, not altogether for the system of teaching, but we have to thank the authorities of the College and the Royal College of Veterinary Surgeons for affording us, or rather presenting to us, that material which is more plastic than it was in the days of old, and which we can model, as it were, more immediately into the likeness of that which we like to admire.

Gentlemen, I have therefore to communicate to you those students of the College who have been successful during the past year in obtaining honourable mention, prizes, and scholarships. The Coleman Prize (silver medal) has been awarded to, first of all, Mr. C. B. Harris. The second (the bronze medal) to Mr. F. E. Place, and the third (certificate of merit) to Mr. T. C. Garry. The Scholarship of £25 per annum, granted by the authorities of the College for two years, has been obtained by Mr. F. W. Hunt. In class "C"

the class prizes have been awarded, firstly, in Veterinary medicine, the first prize being awarded to Mr. J. McCall; the second prize to Mr. T. C. Garry. Mr. McCall has also gained the first prize for Contagious and Parasitic diseases. The other gentlemen who have gained prizes are:

CLASS C.

Contagious and Parasitic Diseases	2nd Prize—Mr. T. C. Garry.
Pathology and Therapeutics ..	1st Prize—Mr. T. C. Garry.
" " ..	2nd Prize—Mr. J. H. Booth.

CLASS B.

Anatomy	1st Prize—Mr. J. H. Taylor.
"	2nd Prize—Mr. G. C. Lowe.
Histology	1st Prize—Mr. J. H. Taylor.
"	2nd Prize—Mr. J. W. Reynolds.
Physiology	1st Prize—Mr. J. H. Manton.
"	2nd Prize—Mr. F. G. Sikes.

CLASS A.

Chemistry and Toxicology	1st Prize—Mr. W. F. Maynard.
" "	2nd Prize—Mr. H. W. Dollar.
Practical Chemistry	1st Prize—Mr. H. W. Dollar.
" "	2nd Prize—Mr. A. Blake.
Botany	1st Prize—Mr. G. W. Lamb.
"	2nd Prize—Mr. W. F. Maynard.
Minor Anatomy	1st Prize—Mr. G. W. Lamb.
" "	2nd Prize—Mr. H. W. Dollar.

Those gentlemen who have won prizes may receive them on applying to the Secretary at the close of this meeting.

Professor BROWN: My lord and gentlemen,—You would be sorry, I know, to separate without performing what is at once a duty, and I have no doubt a pleasure. I have to ask you to give a cordial vote of thanks to Sir Frederick for taking the chair to-day. The position which Sir Frederick occupies makes it quite unnecessary for me to say anything at all in justification of his present occupation of the chair. You know that he has had a long and brilliant career as a soldier; you know that he is one of the Governors of the College; and you know, which is most of all satisfactory to us, that he is a member of the Royal College of Veterinary Surgeons. And whatever effect that may have in the future in the social position of our profession, we can always think with the greatest satisfaction that we have so distinguished a gentleman in our ranks. Gentlemen, you know, most of you, also that Sir Frederick can talk well and pleasantly on the subject of our profession, and I will not therefore deprive you one moment longer of the pleasure of hearing what he may think fit to say to you upon that subject by saying anything more now about him. I have only now to ask you to give a cordial vote of thanks to Sir Frederick for his occupation of the chair to-day.

The vote was passed by acclamation.

Sir FREDERICK FITZWYGRAM, M.P., who upon rising to respond was greeted with loud cheers, said: Professor Brown and gentlemen,—I thank you for the warm and cordial vote of thanks which you have just given me. It has been a pleasure to me to come here again; it is always a pleasure to me to come to the Royal Veterinary College. Professor Axe has noted with pleasure the very excellent papers which have been furnished by those students who have won the prizes in this school. These prizes are, of course, both the object of honourable ambition, and, more than that, I think they are, generally speaking, the first stepping-stone to a successful life. A

student carries away with him the reputation of the school at which he has been, and with the reputation from that school it is very easy for him, as a general rule, to start with fair and satisfactory success in after-life. It is a record, too, that the prizes have been won by students who have shown marked ability. Well, I have, on behalf of the Governors of the institution, to express the regret that in the higher examinations before the Royal College of Veterinary Surgeons our students have not of late years been as successful as the Governors would wish. The number of rejections has been very high, perhaps not as high as those in the competing school; but still it is in the opinion of the Governors higher than it ought to be, considering the very exceptional advantages which the students at the Royal College of Veterinary Surgeons possess. In this College we have a large staff of professors selected from the very ablest men of the Veterinary profession, selected with the greatest possible care, and able and willing to give the very best instruction to the pupils. These professors are taken from as highly a competent body as we can get them, and they hold as high a reputation as their merits deserve; but still of a considerably higher order than in the competing school of the Veterinary College of Surgeons. Our fees at this school have been always somewhat higher, and for the future they will be considerably higher; and those who pay these higher fees have a right to expect that their progress in life shall be more satisfactory than where these advantages and payments do not exist. I would remind you that in this College also there are no private interests. All the receipts from the students go to the benefit of the school. We have in this College also adopted a system, which the Governors have determined on of late years, of dividing the fees; or, in other words, to equalise the fees for the future throughout the three years—that is to say, the students will pay only the same for the first year as they pay for the second and third. Hitherto it has been the practice of the authorities, with those who go into occupation of this and other colleges, of endeavouring to bind the students by demanding a very large portion of the fees in the first year. Many, therefore, appeared to think that it was unwise to throw away the large premium paid at the outset, and in consequence of this we got into the Veterinary College those who were not qualified to become members of our profession. The Governors have, however, reversed this policy; we shall charge for the future an equal fee throughout the three years. We think that by adopting this system we may drive out of the profession those who are not likely to become useful in it or to themselves. We have further decided to return at the end of the first year one half of the fee paid, that being in the opinion of the professors the right thing to do where the students should prove probably unfitted for the life, and his prospects of ever becoming a Veterinary Surgeon being very remote. It is for this reason that we have decided to adopt this course, and to have half the fee returned.

We are also offering exceptional opportunities to those students who wish to perfect themselves in their profession by the erection of the new buildings over the way, in which will be found a number of rooms which will be set apart for the prosecution of their analytical work. They are making good progress with the buildings, which we hope will be shortly opened. In these new buildings the student who wishes to get at the seat of the disease will have every opportunity of doing so; and it is, in my opinion, most important that the man who can discover disease should have everything at his command to aid him in that discovery and original research, and it is that which makes him best fitted for the veterinary profession.

We have also another advantage in this College, which I think is in a great measure somewhat exceptional, of having a considerable number of horses always standing in our stables suffering from various kinds of disease and

every kind of accident that can be conceived. Now, it is a great advantage to have horses standing in the stables, because there they can be seen in a healthy condition, for example; and if disease should exist, it can be at once discerned. It also possesses this further advantage—that the slightest deviation from health can be discerned at once; and with this, proper attention, and by taking the animals in hand at once, the coming disease is frequently averted. We have also the advantage of a very considerable quantity of what we call cheap practice; but that is not as extensive as the Governors could wish, not as extensive as the disease demands; and it may be a question whether the number of days should not be increased from three to five days. The Governors attach the greatest possible advantage to this cheap practice, and hope in time to come to see it more thoroughly carried out, both by the students and the professors.

Gentlemen, with these great advantages and special advantages which you, as students of the Royal Veterinary College enjoy, it is difficult to conceive how the number of rejections at the Royal College of Veterinary Surgeons should have been as high as they were in the past year, considering the honest industry on the part of the students and the professors. We hope that in time to come the number of rejections will be considerably lessened, and that all those who have enjoyed the advantages of this school may also have the honour and the credit of obtaining the diploma of the Royal College of Veterinary Surgeons.

It is difficult, of course, to forecast what may be the result of these changes, but it is the earnest desire and the hope of the Governors that this school—the greatest and oldest of veterinary institutions in the United Kingdom—may be in time to come, as it has been in times past, a credit to itself, to the students, to the professors, and to the Governors of the College. We are also making some changes with regard to the promotion and extension of clinical instruction, which is always difficult to carry out. It is easy enough to invite a lecturer to address a class, say of a hundred pupils; but unless you have the necessary accommodation that cannot be carried out with profit to the students. It is of the utmost importance to teach clinical practice, and if there is any need to increase the number of professors, especially for the purpose of clinical instruction, I believe I am right in saying that the Governors, as far as the convenience of the College will admit, will most readily strengthen the staff, which I think a most important point in veterinary practice.

Gentlemen, I would address a few words to the holders of prizes. You have done well in getting those prizes; they will give you a start in life. At the same time you should never pass a day without using the tools which Providence has given you, and the great advantages which this school has given you in conjunction with others; and it is my earnest hope that you may bring to a successful result in after-life the advantages which you have enjoyed in youth and profited by the industry which you have displayed in the course of your studies. Your future life rests with you. This school can do no more than put you in the way of obtaining an honourable livelihood and establishing yourselves in the veterinary profession—the great profession which is rising daily in importance, which is rising daily in public estimation. By winning these prizes you are demonstrating to hundreds and thousands what can be done by diligent work and what are its rewards. Such work as this in the interests of civilization must go down to posterity, and will be a record of your achievements. The work is becoming more expanded, and this must necessarily increase the number of horses and cattle and other animals which require treatment, and it must inevitably bring a more lucrative practice to the Veterinary Surgeon than he has enjoyed in times past. But I would urge upon you, one and all, prize-holders and those

who have not succeeded in obtaining prizes, to remember this—that you may be successful in life or you may fail in your best and your highest efforts and hopes, but, above all, do your level best to at any rate bear a character which slander dare not touch, and do all you can to bear a name which shall be honoured and revered by all around you.

The proceedings then terminated.

SOUTH DURHAM AND NORTH YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Association was held in the North Eastern Hotel, Darlington, on June 20th, 1890, Jno. Nettelton, Esq., President, in the chair.

The resolutions *re* Rabies from the Central Veterinary Society were considered, and it was decided "that this Association is of opinion that more active measures should be taken in the areas in which rabies has appeared with a view to its suppression."

The election of officers was next proceeded with, when Mr. G. T. Pickering, F.R.C.V.S., was elected President; Messrs. A. Peele and H. Gelsthorpe, Vice-Presidents.

Mr. F. R. Stevens re-elected Treasurer.

Mr. W. Awde, F.R.C.V.S., re-elected Secretary, and Messrs. G. E. Nash and H. Gelsthorpe re-elected Auditors.

Mr. Thomas Bowhill, Darlington, was nominated a member, and Drs. Ironsides, Darlington; Hutchinson, Northallerton; Gardiner, Darlington; and McCullagh, Bishop Auckland, as Honorary Associates.

Professor WALLEY read a paper on "Variola Equina and its Relations to other Eruptive Diseases," which proved very interesting, and a good discussion followed, after which he was accorded a hearty vote of thanks.

ANNUAL MEETING.

The first Annual Meeting was held in the North Eastern Hotel, Darlington, on September 12th, 1890, at 4 p.m., Jno. Nettelton, Esq., in the chair. There was also present Professor Williams, Edinburgh; Thomas Greaves, Manchester; G. T. Pickering, York; A. Peele, West Hartlepool; F. R. Stevens, Darlington; G. E. Nash, Richmond; H. Gelsthorpe, Darlington; W. E. Lawrence, Stockton-on-Tees; W. T. Briggs, Darlington; Thos. Bowhill, Darlington; and the Secretary. Mr. Todd was also present as a visitor.

Apologies for non-attendance were received from Messrs J. E. Peele, Durham; Jno. Fryer, Kirkby Fleetham; and Mr. Moore, President of North of England Veterinary Medical Association.

The minutes of the previous meeting were confirmed. Mr. Percival Smith, Bishop Auckland, and Mr. Thomas Rikkaby, Guisbro', were nominated for membership. Mr. T. Bowhill, Darlington, was unanimously elected a member of the Association.

The discussion of "A New Charter, is it needed?" was deferred to the next meeting, the Secretary being instructed to procure copies of Mr. Hunting's papers for members to peruse meantime.

The TREASURER then presented his report for the past year, showing a balance in hand.

Mr. Nettelton having vacated the chair, a hearty vote of thanks was accorded him for his services, after which

Mr. PICKERING read his inaugural address as follows:—

GENTLEMEN,—Allow me to thank you for electing me President of your Society; I will endeavour to do the best I can for its good. It is not my intention to give a long paper on any special subject, but to bring before you some of the

principal topics of conversation with regard to our profession. This Society, as you are aware, is only quite young, this being the first annual meeting; and I am sure we owe our best thanks to our late President and Secretary who, with some others, brought it to the notice of members in this district, who were unable to attend either the Yorkshire or North of England Veterinary Medical Associations. I have met friends who have the interests of the profession at heart, and we look forward with pleasure to our quarterly meeting, knowing that we shall derive benefit from the exchange of opinions one with another.

Some of the professors have helped us by giving very useful, practical, and interesting papers, and the discussions were taken part in by all the members present. We cannot estimate the value of these societies, not only to the members but to the profession generally. They help to bring about a better feeling amongst the members of the profession, make it more united as a body; and we sympathise with and advise those of our brethren who may happen to need our advice. I need not refer to the various other Societies, nor try to tell you the great amount of good they have done throughout the country. I will make a few remarks about pupils, students, etc. We are getting to our various colleges and schools a better class of young men—men who have had good educations and are fit to go into any society. Since we have had the Act of Parliament the public have appreciated our profession more, our status has been raised, and we have members in the profession now who would not have been in it if there had been no protection for them when they took their degree. The examinations are more difficult, for the standard has been raised. If a young man has not the ability to pass the matriculation examination as it now is, how is it likely he will pass the more difficult professional examination he has to undergo? The subjects taught at the colleges have been increased; we have teachers at our various schools now who are amongst the best men, who set us an example of perseverance and thoroughness which I hope we shall try to follow. Various improvements have taken place at the schools, alterations necessary for an increased number of students, greater facilities for obtaining knowledge, and special classes for Bacteriology, etc. What we want are young men who love their profession, and make up their minds to do their best—that is all we can expect them to do.

"Doing our duty" means a lot, and if we do that, we need not fear, for we are bound to succeed, although perhaps not so well as we should like. The veterinary student acquires his theoretical knowledge at our schools, and a certain amount of practical; but I do not think sufficient practical to enable him to commence practice on his own account. Young men little know how they will be watched by the public when they obtain their diplomas. They think they are too young and inexperienced to know much, but if they are practical men they can always make a living.

The college fees have been raised I am glad to see—not before time. Considering those at the various medical schools, I think ours are very reasonable. The course of lectures are very similar, medical men are amongst the professors, and if we do not pay the professors well, how can we expect to get the best men. What we require are gentlemanly, well-educated, practical men. Ours is a noble profession—it can never disgrace us, but we can disgrace it. The public know the value of employing qualified and experienced men, and they do not care to trust the lives of their valuable animals to empirics; yet it is not always that the cleverest men succeed the best, but those who have tact and experience, and know how to manage a client as well as a patient.

Veterinary surgeons, like poets, are born, not made. There are plenty of young men who go to college because they want something to do; they have no real liking for the profession, but they are fond of animals, and like riding and driving. When it comes to the every-day work of a practitioner

in a mixed practice, who has rough as well as smooth, perhaps more of the former, they really do not care for the work; especially when the work that has to be done is not very clean or agreeable. It is necessary, above all things, that practitioners should pull together. The public watches us very carefully, and nothing pleases them better than when they find us differing in opinion. We must be united if we desire to do any good, and raise the status of the profession. What brings our profession into more ridicule than seeing two professional witnesses in court, and hearing one swearing one thing and another the other? There will always be differences of opinion, and we shall never be able to agree; but when we disagree let us do it, not as if we were trying to show up our opponent's ignorance before others, and lead the public to suppose that neither of us know very much about what we are saying. Let us help each other whenever we possibly can. In unity there is strength. It is for the good of the profession that we should be united, and by helping each other we help ourselves. Our profession, although a young one, has made very rapid strides during the last few years. I don't suppose, in so short a space of time, any profession has come so prominently before the public. The Government has not recognised our profession as the different Foreign Governments on the Continent and elsewhere have done, and we don't receive State aid, but we owe our position in a great many ways to the industry, usefulness and example of some of our most prominent members. The wonderful discoveries in medicine, the different and more scientific ways of treating our patients, have helped us. When we look over some of the old works on medicine, we marvel at the large and injurious doses of drugs that were given, and wonder what was the therapeutic action, and with what success the animal patients were treated. The great improvements in surgery, human and veterinary, we all know. Where wounds, etc., are now treated antiseptically, they were at one time left to chance and a good constitution. Referring to the Ninth Clause, there are numbers of members who are well able to represent us in the Council who have not taken the Fellowship degree. They have not the time for reading; they are too old, as it were, and do not care to go before a Board of Examiners and be examined. I think a certain number might be elected by the profession, fit and proper men, and that they should be granted the Honorary Fellowship degree. We cannot afford to be divided, we are too small a profession; we shall never have much power if we do not pull together. I should advise all young practitioners not to give up their reading, but keep it up, and take the Fellowship degree as soon as they can. It is hard to commence reading when we have been in practice for a few years; we do not care to settle down to study when we find how rusty we have become; but if we keep up our reading, doing a little every day or in our spare time, it becomes a pleasure, and does us good in our every-day practical work. There is plenty of scope for good practical men—men who know their work, and whose positions are made by their own industry and perseverance. We cannot all expect to get to the top of the ladder—let us aim high, for if we do not try we shall never succeed.

Our literature has improved; we have some valuable journals, our text-books are better and more fitted for use. We cannot attempt to compare our literature with that of the medical profession, but we have their valuable books to refer to.

One important subject that affects most of us, the examination of horses as to soundness and our liability, I must notice. If we are liable for large amounts, we must raise our examination fees. One thing is certain, that we must mention everything abnormal we find; of course it would not do to reject every horse that is not perfectly sound, but we can give our opinion on the defects detected in the examination. We cannot be too particular or

thorough, and before a man can become an expert, he must have had plenty of practical experience. If we are not found negligent or lacking professional skill, and have done our best, who can find fault? There will always be differences of opinion conscientiously arrived at. What one will call Coarse Hocks, another will call Spavin, and as long as the horse examined does not go lame, perhaps no fault will be found; but if he does, it is called Spavin at once. We cannot be too careful; we must go about our examinations in a methodical manner, not flying from one part to another; our eyesight and hearing must be well developed, and we must possess an educated touch. What some old and experienced practitioners would not have the slightest hesitation about passing, a young practitioner might hesitate about, perhaps reject the horse—another will pass him. One horse so passed might do his work for years; and although the young practitioner has not had sufficient confidence in his own judgment, yet he had better reject a few horses that are not legally, but practically, sound, than pass to a client an unsound animal. We cannot always please the vendors—we have not always the facilities for a thorough examination, especially at sales; yet if we have had a fair practical experience, go about our work in a thorough methodical manner, mention what we detect, although the opinion given may not always be right, yet we have called our client's attention to it. I have no doubt in time we shall have specialists for the examination of horses. They will be better paid, and they will devote their time principally to this branch of the profession.

A few remarks on the "Veterinary Defence Society." We did intend forming a new society, to be called the "Yorkshire and General Defence Society," but I see from a circular sent out by Mr. Greaves the other day, that the old Society intend reducing their entrance fees from five guineas to one guinea, and the annual subscription to ten shillings and sixpence. I have no doubt we shall join the old Society. The new Society thought the fees were too high, and the great amount of the entrance fee prevented members joining who otherwise would have joined long ago, knowing full well the benefit to be derived from being a member of such a useful Society. We do not expect these Societies to protect those who are negligent about their work, but those who after using ordinary care and skill in performing the various operations entrusted to them, are sued by their clients because they have not been successful.

Much is being done by the Veterinary Department of the Privy Council, to stamp out the various contagious diseases among the domesticated animals of this country. Inoculation has been tried with varied success. Compulsory slaughter is now necessary, and all animals affected with Pleuro-Pneumonia, and those that have been in contact with them, are destroyed, the places disinfected, and the owners receive full compensation for the animals destroyed. I have no doubt if these measures are thoroughly carried out, that they will have the desired effect, and that these frightful diseases will soon be stamped out. I think experienced veterinary surgeons who could diagnose the various contagious diseases, who have a good knowledge of pathology and morbid anatomy, would have made better inspectors than officers of the Army or Navy.

The election of members of Council is one of the most important matters we have to discuss. They are elected by the profession to represent them, and do all they can for their welfare. I do not think we give them sufficient credit for what they do—they give their valuable time and experience for the good of their profession; some of them travel a great distance, and at great expense. The Council consists of some of the best men in the profession—men whom we can look up to with pride, and only try to follow in their footsteps. We require the best men both for examiners and members of the

Council, and if these do their duty to the students they examine, and the best they can for the welfare of the profession—what can we expect more than this? No doubt some would like to be in their places, but could they do better? Before sitting down, allow me to thank Professor Williams and Mr. Greaves for their great kindness in coming so far to help us. We know they wish us every success; we should be glad if they would give us their views on some of the subjects mentioned.

Mr. GREAVES said that no satisfactory conclusion had been arrived at as to soundness, and he knew of some of the ablest and most experienced veterinary surgeons who said they had examined many horses and rejected them for Spavin, which had never gone lame for an hour. He thought that they must throw more responsibility upon the buyer, and after pointing out such things as Enlarged Hocks, etc., tell their clients that they must use their own judgment.

Professor WILLIAMS said it was all very well to throw the responsibility upon the buyer when it could be done, but there were many trivial things not worth mentioning. It was all very well when they were dealing with a man who knew anything about the animal he was buying, but they could not do it in the case of the man who knew nothing. Speaking of Pleuro-Pneumonia, he said it was a reflection upon the profession that the veterinary surgeon, called in after the inspector, who might be a policeman, had declared pleuro-pneumonia to exist, to see an animal slaughtered, should have to pack the lungs and send them to the Royal College. If a mistake had been made, and the veterinary surgeon had made it, and sent his private diagnosis to London with the lungs, did they think they would give him credit for it if his diagnosis was verified? No, they would say he had made a mistake.

Mr. STEVENS thought it well to point out every defect that they had noticed to the buyer.

The PRESIDENT having made a few concluding remarks, the discussion was closed.

THE DINNER.

The members subsequently dined together at the hotel. The President occupied the chair. The loyal toasts were given by the President and duly honoured, and Mr. Nettelton then proposed "The Army, Navy, and Auxiliary Forces," which was responded to by the President, Mr. Peele, and Mr. Bowhill.

The PRESIDENT gave the toast of "The Council of the Royal College of Veterinary Surgeons."

Mr. GREAVES, the oldest member of the Council, in responding, said it was their duty to see that more practical and better veterinary surgeons were produced, but somehow it was not done. One of their best teachers had said they did not turn out as many practical men nowadays as they used to do 10 or 15 years ago. There was more science and a greater number of teachers perhaps going more deeply into science, but they turned out men who were little less than scientists. Show them a lame horse and some of those with a diploma and something more, the highest marks, would tell them the horse was lame on the opposite foot to the one which he was lame on; and put them in a sick box and the chances were he would be completely at sea. He hoped the time would come when there would be a professor told off to see every student perform every operation.

Mr. GREAVES proposed the toast of "The Teaching Schools," and said Professor Williams was a good practical teacher.

Professor WILLIAMS said that practical teaching was very essential, but he disagreed with Mr. Greaves in some respects, because there was more practical teaching given now than there was a few years ago; but in the days when they went to college, those who went to college knew something about

animals before they went. Now they had young men from all grades of society, some not fitted at all to be veterinary surgeons, and it was impossible to teach them the practical part of the profession. In that respect they were under great disadvantages to what they were 30 or 40 years ago.

Professor WILLIAMS proposed the toast of "Success to the Association," which he said was composed of practical men, and which he was glad to see was successful.

Mr. AWDE, Hon. Sec., responded.

Mr. STEVENS then proposed the health of "The Visitors," to which Mr. TODD, jun., responded, and the proceedings concluded.

W. AWDE, *Hon. Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

THE twentieth Annual General Meeting of this Society was held at the First Avenue Hotel, Holborn, on October 2nd, 1890, at 7.30 p.m. The President, Mr. William Hunting, occupied the chair. The Fellows present were Messrs. A. L. Butters, Donald Gregory, A. Gostling, Ingersoll, Mulvey, Oatway, Raymond, Rogers, Rogerson, Roots, Samson, Slocock, West, Wragg, and Villar, while Messrs. Evans and Irving attended as visitors.

The minutes of the previous Annual General Meeting were read and confirmed.

Correspondence was read from Mr. J. Malcolm, Hon. Secretary Midland Counties Veterinary Association, from Mr. Joseph Woodger, Mr. J. S. Hurndall, Mr. A. Prudames, Mr. Charles Sheather, and Mr. H. C. Legge. Mr. Matthew Clark, M.R.C.V.S., of Wimbledon, Mr. W. F. Barrett, M.R.C.V.S., of New Cross, and Mr. A. E. West, M.R.C.V.S., of Chelsea, were unanimously elected fellows of the Society.

The Honorary Secretary next read the annual report and the balance sheet for the past year, which showed the Society to be in a very prosperous condition. On the motion of Mr. F. Wragg, seconded by Mr. Oatway, both documents were received and adopted.

The election of officers for Session 1890-91 was then proceeded with, and Mr. F. G. Samson, of Mitcham, was, on the motion of the retiring President, unanimously elected President of the Society. Messrs. Hunting, Mulvey, Raymond, and Wragg were elected Vice-Presidents; and Professors Axe and Pritchard, Messrs. H. Edgar, H. D. Gibbings, Alfred Gostling. T. Moore, F. Oatway, H. G. Rogers, A. Rogerson, W. Roots, J. Rowe, and S. Slocock as members of the Council. Messrs. A. L. Butters and W. Roots were appointed auditors. Mr. Joseph Woodger was unanimously re-elected as Hon. Treasurer; the Hon. Secretary was also re-elected.

Votes of thanks were heartily accorded to the retiring President, to the Hon. Treasurer, and to the Hon. Secretary.

It was announced that the Annual Dinner would take place on November 6th.

At a meeting of the Council of this Society held on October 13th it was unanimously agreed, on the motion of the Hon. Secretary, seconded by Mr. Slocock, "That during the Session 1890-91, a prize of the value of five guineas be offered by this Society for competition among the students of the various veterinary schools for the best dissected specimen." Also on the motion of Mr. Hunting, seconded by Mr. Mulvey, "That the Central Veterinary Medical Society make an offer of a grant to the Royal College of Veterinary Surgeons of a sum of £50, as the nucleus of a 'Prize Fund,' from which annual prizes be offered to the students of British Veterinary schools, to encourage special competitions in practical anatomy."

SIDNEY VILLAR, *Hon. Sec.*

GLASGOW VETERINARY COLLEGE.

Opening of the Session.

The Introductory Lecture of the forthcoming Session of the Glasgow Veterinary College was delivered on the 22nd inst., at the College, by Professor Charteris, of Glasgow University. Bailie Wallace occupied the chair, and there were also present—Principal McCall, Bailie Graham, Professors Cooke, Limont, and Dr. McCall, etc.; Rev. David Watson, Mr. Wm. Brand, Mr. J. G. Kerr, Mr. Campbell, F.R.C.V.S., Kirkcudbright, and the following members of the profession, viz.:—Messrs. McGeoch, Paisley; Peddie, Cathcart; Frew, Forbes, Blue, and Kirk, Glasgow; Borrowman, Cupar Fife; Begg, East Kilbride; etc., etc.

There was also a full attendance of students.

Letters of apology for non-attendance were received from a number of gentlemen, amongst others from Dr. Fleming, C.B., Professor McKendrick, Professor McFadyean, Mr. Young, Editor *N. B. A.*, Mr. Briggs, V.S., A. W. Hill, etc.

The address, entitled "A Medical Holiday," was then delivered by Professor Charteris:—

Mr. Principal and Gentlemen,—I fully appreciate the honour you have conferred upon me by asking me to give the opening address of this session to the Royal Veterinary College, Glasgow. The pursuit which you follow is closely allied to medicine as applied to man, and whatever advance there may be in each department is felt all along the line in the battle we wage against disease. Our progress is side by side. Hence, I opine, the cordial sympathy which exists between the University of Glasgow and this College. We rejoice in your prosperity, as I doubt not you are glad to learn of ours; and I trust this good feeling may ever exist between us.

In previous years the position which I now occupy has been held by respected colleagues, who have addressed you on scientific subjects with which their names have been so long and honourably connected. I shall not attempt anything in this line; I should fail if I did so; and I will content myself with a lighter theme.

A charming book has lately been written by Jerome, entitled "The Idle Thoughts of an Idle Fellow." It is amusing, full of anecdote and witty sayings, and I advise you to read it after the reaction, say, which follows the ordeal of an examining board. After a winter and summer session a man becomes somewhat fagged, and to such an one idleness or a holiday is as pleasant as it is to a schoolboy; and this idleness, at least the recollection of it, is more enjoyable when his hours of leisure combine pleasure and relaxation with advantage to himself and to others who may become interested by what he has seen. I wish, therefore, to tell you how I spent my holiday during the autumn months of this year.

I went to Norway, and subsequently visited various health-resorts in the south of England. Norway is replete with interest. Nature can there be seen in its grandest aspects at a very reasonable outlay. The rock-bound coast, the lofty mountains, some covered with eternal snow, the beautiful sweep of the fjords, the immense lakes, the short swift-flowing rivers, form pictures which no language can fully depict. They cannot be described; one must see them to realise them. The people are simple in their habits, honest, frugal, and hardy, and present the best types of the Scandinavian race uncorrupted by too much civilisation—true children of nature.

If any one of you should elect to go to Norway, do not attempt to rush it, as many foolishly try to do, by hurrying from place to place; but rather linger in some favoured spot, and thence make excursions by steamer, by rail, by carriole, or on foot. Then, but not till then, will a holiday there be pleasant;

then, but not till then, will an adequate conception be formed of its country and its people.

One of my chief objects in choosing Norway for part of my holiday was to make myself acquainted with leprosy, and for this purpose I visited Bergen and its noted Leper Hospital. I was courteously received by Dr. Carl Looft, who speaks English well, and who was able to show and explain to me in all its stages this ancient and remarkable disease.

It is unnecessary to enter into the history of leprosy. It is sufficient to explain to you the two forms in which it is seen, viz., the anæsthetic and the tubercular, the symptoms and course of which are different.

The Anæsthetic is ushered in by a tired feeling, followed by neuralgic pains in different parts of the body; subsequently spots, rather difficult at first to detect, appear on the arms and face. As the disease advances, they are seen to be symmetrical, brownish-red in the periphery, and in the centre white. They assume in time the size of a nut or walnut. Anæsthesia is detected over the spots, and also on some fresh parts of the skin, and there may be also swelling of the glands. Contraction sets in, which as a rule is permanent, and is associated with the distribution of the facial, the ulnar, and the nerves of the extremities. Paralysis follows, and ultimately topical necrosis of the bone. The course of this form of Leprosy is slow, and may extend over a number of years. Thus I saw in the hospital a man who had been an inmate for thirty years.

The Tubercular.—In this form a symmetrical tubercular eruption appears on the face, arms, and legs, and afterwards on the trunk. After a time the tubercles soften, suppurate, and break, and the disintegrating process affects the bones. The course with the tubercular is more rapid than in the anæsthetic, and death occurs in from eight to ten years. In some cases healing of the sores occurs, and brown spots with white cicatrices mark their sites; at times also the lungs are affected with Phthisis, and the bacillus of Koch, but not the bacillus of Leprosy, is recognised.

The bacillus of Leprosy is seen in both forms; but naturally, as the course of the disease indicates, it can be detected at an earlier stage of the tubercular than in the anæsthetic. It essentially differs from the tubercle bacillus in the following points. It is never seen in the lungs, kidneys, brain, or spinal cord. There are with it no blood-vessels, no caseous degeneration, and no giant-cells. It is distinctly formed in a cell, and not, as Unna, the celebrated dermatologist, states, in the lymphatics. Further, a minor distinction between the two bacilli in this, that the tubercular bacillus colours quickly with aniline, the bacillus of Leprosy with difficulty.

The opinion at Bergen with regard to the disputed question of contagion is very decided. They say the disease is not in the ordinary sense of the term contagious. During a series of years the disease has not been transmitted to any attendant in the hospital, with the exception of one case where a washerwoman attached to the hospital, neglecting the usual precautions, was attacked by the tubercular form. There was in this instance no hereditary taint, yet the disease went through its usual course, and the woman died. They believe that the disease is mainly hereditary, and does not depend on any particular kind of food, or on any climatic influence.

It is, however, conceded that it may be contracted by a healthy person through close personal intercourse with a leper, or that it may originate from the bacillus being swallowed, or by its coming into contact with the eye. It cannot occur from inhaling the breath of a leper. In connection with this I noted that a young man who showed me round the wards expectorated previous to entering or leaving a ward.

I may also state that I saw a woman of twenty-five years of age on whom the anæsthetic form was commencing. Here there was no hereditary history,

no evidence of bad food, but she had been in constant attendance on a leprous woman in the country, and from the limited size of the hut had been obliged to sleep with her. This case was very pitiful. The woman had an attractive appearance, yet she was consigned to a living tomb, for no leper is allowed to leave the hospital, or to receive a visit from friends. From its nature leprosy is necessarily attended with suppuration, and in the wards where the worst cases were observed, the odour was distinctly sickening and fœtid, and, except in the earlier stages, it is also offensive to the sight. In these advanced cases it was very painful to see the blotched face, the sightless eyes, and to hear the oppressive and heavy breathing of those who were slowly but surely nearing their end.

Treatment.—In the olden times the leper was barred by the Church and boycotted by the people. "A pair of clappers, a barrel, a stick, cowl, and dress were given to him; he was interdicted from appearing without his leper's garb; he was forbidden to walk in narrow paths; from answering those who spoke to him unless in a whisper, that they might not be annoyed with a pestilent breath and with the infectious odour which exhaled from the body. The official of the Church terminated the ceremony of his separation from his fellow-creatures by throwing upon the body of the poor outcast a shovelful of earth, in imitation of the closure of the grave." Alone and unattended, except by his fellow-sufferers, he had to "dree his weird." The march of civilisation has altered this condition of matters. Father Damien's noble life and tragic death lent additional force to efforts that had been made in mitigating the sufferings of the lepers. The cause and prevention of the disease has been discussed in the press and in professional and social circles, and royalty has thrown its ægis over the proposal of a National Leprosy Fund.

There is little probability of the disease spreading in this country, but in India it appears to increase unchecked, and the Executive Committee propose an inquiry there on its social as well as its medical aspects. Such an inquiry, by enlisting national sympathy in its support, must pave the way for legislative action thorough and complete, by which the leper will be removed from the haunts of men to well-selected hospitals; for this separation is the only treatment which, according to our present knowledge, is of any avail. When the disease begins there is no hope for the afflicted one. No medicine seems to arrest its progress.

With reference to this I wrote to Dr. Looft and asked information on two points, viz.: (1.) Is separation in Norway compulsory? (2.) Has perchloride of mercury injections been tried in the early stage of the disease? He replies:—

(1.) We have in Norway no law which compels the leper to enter the hospital. The law says about the lepers that, if the hygienic police find that the leper cannot get the necessary nursing at home, and there is danger of the family being infected, the hygienic police shall compel him to enter the hospital.

(2.) Dr. Danielssen, the old-experienced Leprosy surgeon at this hospital, said to-day to me that thirty years ago he had tried an injection of the perchloride of mercury in all stages of Leprosy, but never with good results. The lepers became worse, and eruptions and boils ensued.

I now pass on to speak of the second part of my holiday. I walked from Plymouth to Penzance, and visited Torquay, Exmouth, St. Ives, Falmouth, and Exeter. Subsequently I took the steamer to the Scilly Islands. In my pedestrian tour two facts struck me as rather strange:—

1. The oats, wheat, or barley cut by the reaping machine is not bound up and stooked as at home, but lies in *statu quo*. This seemed to me a tempting of the elements, or an abiding trust in any weather.

2. The soil is rich and loamy. The sheep are not white, but have a whitish-red appearance, as if they had been keeled. I saw no black or white cattle; they were all dun-brown in colour.

The Scilly Islands occupy a unique position. Within an hour from Penzance, the rocky coast of Cornwall, embracing Land's End and the Lizards, is lost sight of, and then looking seawards you observe faintly with the unaided eye a group of rocky prominences springing right out of the ocean. As the steamer draws nearer these, you perceive the individuality of each in its greater or less extent. In number they are about 300; five are uninhabited, forty bear herbage. St. Mary's is the largest inhabited island, and we landed on its pier after passing through a beautiful natural harbour. The circumference of the island is about nine miles, and a forenoon walk easily enables one to make its circuit. Except on the coast-line, it is by no means barren, for the soil in the island is dry and fertile. The temperature is very equable. There is no extreme cold in winter, nor excessive heat in summer. The official record shows a mean summer temperature of 58° Fahr., and 46° Fahr. in winter. The rainfall is about the average of what is recorded in the south-west counties of England. The prevailing wind is a genial south-wester, but occasionally a piercing blast from the east continues for some days.

What about fogs? My inquiries were very particular as to the existence of these, and I satisfied myself, from looking over the books, kept with great care at the meteorological station, that in the months of April and May there might be two or three days of fog, partial or complete. In the other months of the year they are rarer, and never continuous—a slight fog in the morning, clearing away as the day advances. Fogs, as you are aware, prove very detrimental in hastening or evoking pulmonary changes, but the fogs here should not act as deterrents for any one desiring to make a climatic change in winter. Further, the peculiarity of the change to St. Mary's is this, that it would give all the advantages of a sea voyage with a minimum of the drawbacks. The exposed position of the island guarantees an abundance of saline particles in the air, the great desideratum in a sea voyage. There is an equable atmosphere during the day to draw these into the system, and the patient can have in hotel or lodging all those comforts in which land must be ever superior to the sea. On a stormy day he need not leave the house. He can survey the scene from an arm-chair and before a comfortable fire, and not, as at sea, with the dread, which even the bravest feel, when the hatches are battened down and a gale is blowing. Further, meals can be obtained at regular hours with no qualmy sensations, and rest can be secured at night uncribbed, uncabined, and unconfined. These advantages are great; they cannot be minimised; yet a residence at St. Mary's would have certain disadvantages as compared with other winter health-resorts, or even from a life on a well-appointed steamer. The island is small; the position is cramped; its surroundings and its hidden treasures can be found out in a forenoon walk. There is a lack of society, and there is the banishment from friends, periodicals, and newspapers. The steamer from Penzance with mails comes in winter once a week, but its days of sailing are not fixed. These depend on the exigencies of the weather, and some aver that on account of this there may be not exactly a famine in the land, but a deficient supply of fresh provisions, butter, milk, or eggs. With regard to these, I may relate the following anecdote: I was sitting in the evening with a friend of mine on the verandah of Hugh's Hotel, the view from which, when the sun is setting, being beautiful in the extreme. We were admiring the prospect when a lady and gentleman approached; the latter stepped into the hotel, the lady remained outside. The evening was warm and pleasant. We forgot the necessity of an introduction, and entered into conversation with her. She had travelled; she was voluble; she lived in London, but had come to St.

Mary's with her husband for the purpose of fishing. She had a doleful account to give of the island. There was no butcher, and the meat which came to the island by the steamer was at once pounced upon by the hotels. One day their dinner consisted of vegetable marrow and sardines. She looked cheerful and happy, but she stated she had lost eight pounds in fourteen days. Her story was plausible, but it was not true; for we learned that butchers' meat could be purchased every day of the week, with the exception of Sunday and Monday.

The Governor of the Islands lives at Fresco, near to St. Mary's. His garden there, under the care of a Scotsman, testifies, in a striking manner, to the geniality of the climate. We saw palm trees and exotic plants, only cultivated in hothouses, growing in the open air. There was also a collection of ferns of all kinds, and cacti. At the entrance to the garden you observe figure-heads gathered together from wrecks at different times; some of these date back 200 years, and have been picked up from time to time by the fishermen round the coast.

We learned that from St. Mary's the steamer is sent away daily in January, laden with narcissus and lilies, for Covent Garden and other markets. New potatoes are exported from the beginning of April. Where vegetation is good, there also human life must thrive; and as bearing on this I shall conclude my remarks by reading a letter from Dr. Moyer, who has practised his calling for forty years at St. Mary's.

After speaking of the winter and summer temperature, to which allusion has already been made, he says, "Frost and snow are very rare; I have only witnessed snow six times, and then it only lay on the ground for a very few days. With regard to chest diseases, Pneumonia and Acute Bronchitis are very rare. There is Phthisis—not, however, due to the climate, but the result of heredity. I could certainly recommend the climatic conditions as favourable to sufferers from pulmonary diseases, and as a beneficial health-resort from December to March. There are excellent and reasonably-priced lodgings to be had; there is a good market, and a plentiful supply of potatoes, eggs, and cream—the Cornish cream, so valuable as a curative agent in Phthisis. I can, from my lengthened experience, state that this island is in every way a desirable residence for invalids with weak chests."

These words, gathered from the experience of a man who in the evening of his days is retiring from active work, seem convincing and true; they are beyond criticism, and above cavil.

After the address, Bailie Wallace, in a few well chosen, amusing, and trite remarks, gave the students good advice as to their future conduct; after which votes of thanks were accorded Professor Charteris and the Chairman.

NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

THE thirteenth general meeting of the above Society was held in the Blackfriars Hotel, Manchester, on 24th September, the President, Mr. Peter Taylor, in the chair.

There were present: Messrs. R. Reynolds, Thos. Greaves, J. E. Scriven, P. Deighton, Wm. Whittle, A. L. Gibson, Sam Locke, W. A. Taylor, R. C. Trigger, J. Lawson, H. Thompson, J. B. Wolstenholme, Thos. J. B. Taylor, T. Hopkins, and Geo. Morgan.

The minutes of the last general meeting and also the different Council Meetings having been read and confirmed, the PRESIDENT addressed the meeting on the advantages of the Society, and also the proposed alteration of the rules; which alterations were not caused by outside pressure, but were mooted at the last meeting upwards of two years ago, and had since been

fully considered by a committee duly appointed for that purpose. He hoped the alterations would be the means of inducing many members of the profession to join the Society, and thus save themselves from many an anxious thought and sleepless night when threatened actions were hovering round their pillow.

The SECRETARY then read his report, from which it appeared that since the last general meeting, the Council had met five times, and four cases for defence had been satisfactorily dealt with. In the Benevolent branch one grant had been made, and one annuity withdrawn. A son of a deceased member had also been nominated for the free studentship so generously placed in the hands of the Council by Principal Williams

The TREASURER then read his report, which shows that there is now invested in Mersey Dock Bonds the sum of £1,900, in Bank £931 10s. Benevolent Branch. Of this he suggests that £900 should be invested in Manchester Corporation Stock, a suggestion that the meeting afterwards approved. The Defence Fund amounted to £134 10s., there were also arrears to the amount of £36 4s., owing by twenty-one members. The number of the members had been considerably reduced by death and resignation, but principally from falling in arrear, and, after several applications for payment, to which they seldom pay any heed, being struck off as defaulters. From these causes we have sixty-eight fewer members than when we met ten years ago. The reduced subscription also had made a reduced income, but at present it was quite sufficient to cover the outlay, and there were no outstanding liabilities. The bank book and the bonds were both in his keeping.

Before commencing the discussion of the proposed alterations, the SECRETARY, with the permission of the Chairman, gave a short *resumé* of the proceedings of the Society since its formation twenty-five years ago, in order that some of the younger members might know that these proposed alterations had been tried long ago and had been abandoned.

In 1865, a paper was read at the Liverpool Veterinary Medical Association on the liabilities of veterinary surgeons. It was discussed by most of the Veterinary Associations then in existence—they were not so numerous as at the present day—and the outcome of these discussions was that a deputation from the Liverpool, Yorkshire and Lancashire Societies met at Manchester to lay the foundation stone of the "Veterinary Mutual Defence Society," adopting as their motto "Defence not Defiance."

Liverpool was represented by Robt. Lucas, John Ellis, and Geo. Morgan Lancashire by P. Taylor, Thos. Greaves, John Lawson, and Cuth Simpson; Yorkshire by E. C. Dray, C. Secker, and Wm. Williams. A draft copy of rules and regulations was agreed to, and the first officers elected as follows, President, Robt. Lucas; Vice-President, Thos. Greaves; Treasurer, Chas. Secker; Hon. Sec., George Morgan.

The first annual meeting was held in Liverpool, at which eighteen members attended. Some alteration was made in the rules, and the Treasurer reported that a number of the members had neglected to pay the entrance fee. By the time the second annual meeting was held, which was in Manchester, we had 120 members, of whom fifteen attended the meeting; and the Treasurer announced that the arrears had reached the respectable sum of £144 18s. At this meeting it was re-christened "The National Veterinary Benevolent and Mutual Defence Society."

The third meeting was held at Leeds, at which meeting Mr. P. Taylor was elected President; twenty-one members attended, and fifteen cases had been dealt with by the Council up to that date.

Fourth meeting was held in London, the attendance was twenty, and the Treasurer reported that fifty-seven members were £125 8s. 6d. in arrears.

Fifth meeting, held in Edinburgh, thirteen members attended. Thirty-

three members were struck off in arrears. Another revision of rules ordered.

Sixth meeting, held at Birmingham, attendance four. Two from Manchester, two from Liverpool; all returned home disgusted.

Seventh meeting, held in Manchester, attendance five. The inutility of annual meetings displayed by the meagre attendance of members and the apathy of the profession generally, induced those present to pass a resolution discontinuing them, discretion being given to the President to call one any time within five years. Up to this time thirty cases had been dealt with by the Council.

Eighth meeting, held in Liverpool, twenty-four members present. Since last meeting the Council had met six times, and dealt with seven cases. At this meeting it was resolved that after the end of that year, the entrance fee be raised to £5.

Ninth meeting, held at Liverpool, eleven present. In the interval the Council had two meetings and four cases. Trustees were appointed to invest the funds and several alterations of rules made.

Tenth meeting, held in Manchester, twenty-one present. Rule regarding Life Governors amended; ten meetings of Council had been held, and eleven cases dealt with.

Eleventh meeting, held in Manchester, fifteen present, several alterations made, amongst others the subscription, which up till this time had been 21s. for those having forges, and 10s. 6d. for those without. Contrary to expectation, experience had taught the Council that those members who had no forges were oftener in trouble than those who had. Four meetings of Council and four cases.

Twelfth meeting, held at Manchester, nine members present; five meetings of Council reported and four cases. Notice given by S. Locke that at the next meeting he would move the reduction of the entrance fee. We have thus had since its commencement twelve general meetings and thirty-seven meetings of Council at which upwards of sixty cases have been discussed, independent of those which have been advised upon and disposed of by individual members of the Council privately.

The proposed alterations of the rules were then discussed seriatim, and several important alterations made. For instance, the reduction of the entrance fee from £5 to 21s.; the raising of the Defence Fund from £500 to £1,000; the appointment of four trustees who shall not be the officers of the Society, that is, there shall be no dual appointment; the present Trustees to hold office till next meeting; and the funds to be invested only in securities authorised by Act of Parliament applicable to Trust Funds; the appointment of two Auditors outside the Council to audit the Treasurer's accounts; and that notice of amendments to be sent to the Secretary previous to the 1st of January in each year. Verbal alterations were made by several professed disciples of Lindley Murray, but which do not affect the working of the Society.

The Treasurer then proposed that £900 be invested in Manchester Corporation Stock, which was duly seconded and carried unanimously.

The officers were re-appointed, viz.:—

President: P. Taylor. *Vice-President:* R. S. Reynolds.
Treasurer: Thos. Greaves. *Hon Sec.:* George Morgan.

Council: Thos. Briggs, J. S. Carter, T. Hopkins, John Lawson, Sam Locke, W. G. Schofield, W. A. Taylor, R. C. Trigger, Thos. Walley, Wm. Whittle, Wm. Williams, Wm. Woods.

Auditors: Ed. Faulkner, J. B. Wolstenholme.

A unanimous vote of thanks to the Chairman for his services terminated the meeting.

GEORGE MORGAN, *Hon. Sec.*

Army Veterinary Department.

Gazette, September 23rd.

YEOMANRY CAVALRY.—Dorset (Queen's Own). Veterinary Surgeon J. Rowe resigns his Commission; also is permitted to retain his rank, and to continue to wear the uniform of the regiment on his retirement. Dated 27th September, 1890.

Gazette, October 7th.

Inspecting Veterinary Surgeon John Anderson retires on retired pay. Dated October 8th, 1890.

Gazette, October 21st.

Veterinary Surgeon, 1st class, Henry Thomson to be Inspecting Veterinary Surgeon (ranking as Lieutenant-Colonel), vice J. Anderson, retired. Dated 8th October, 1890.

Robert Langley Crauford, gent., to be Veterinary Surgeon (ranking as Lieutenant), in succession to Veterinary Surgeon H. Thomson. Dated 22nd October, 1890.

Veterinary Surgeons, First Class, R. Poyser, J. J. Phillips, and J. W. A. Morgan, and Veterinary Surgeon R. W. Burke, have embarked for a tour of duty in India.

Veterinary Surgeon, First Class, G. J. R. Rayment, who is in this country on leave of absence from India, has been directed to proceed to Paris for the purpose of undergoing a course of special instruction in Pasteur's laboratory.

By the retirement of Inspecting Veterinary Surgeon Anderson, the Veterinary Department, no less than the Army, loses a very excellent, genial, and distinguished officer, who has seen much service in various climates, and has displayed not only great professional ability but, at least on one occasion, marked gallantry. His record of war service is as follows:—

Served in the New Zealand War in 1860-66, including the Taranaki and Waikato campaigns, and was present at the affairs of Kerri Kerri and Pukikohe, and actions of Rangiawhia, Hirmi, and the Gate Pah. Mentioned in despatches. Medal. In the affair of the Gate Pah it was reported that, the Artillery officers commanding a gun having been shot down, Mr. Anderson took command of it until the termination of the action.

Served with the Abyssinian Expeditionary Force in 1867-68, and formed and had charge of the Sick Depôts at Koomayloo and Pioneers Wells, and was three times employed on special service. Mentioned in despatches. Medal.

Served in the Afghan War in 1879-80, with the Koormu Field Force, and afterwards with the Khyber Line Force as Principal Veterinary Surgeon. Mentioned in despatches. Medal.

Served in the Egyptian War of 1882 as Principal Veterinary Surgeon with the Indian Contingent, and was present at the battle of Tel-el-Kebir and at the capture of Cairo. Medal, with clasp, and Khedive's star.

In addition to this brilliant record of war service, it will be remembered that Mr. Anderson had a very narrow escape from being murdered not long ago, having been attacked by Dacoits when travelling on a tour of inspection, and severely mutilated by sword-cuts. We hope he may enjoy his retirement for very many years.

Obituary.

WE regret to learn that C. H. Betser, M.R.C.V.S., Army Veterinary Department, died on October 12th at Steyning, Sussex, his home, where he had been since his arrival from India, seriously ill from climatic disease. He graduated in 1878, and joined the Army in 1884; at the time of his regrettable decease he was only thirty-two years of age. He served in the Soudan Expedition in

1885, at Suakin, for which he received the medal, with clasp, and Khedive's bronze star. An excellent officer, and greatly esteemed for his professional and private worth, his untimely death will be much felt by all those who knew him.

The death has been reported of George Cowlishaw, M.R.C.V.S, Derby, who graduated in 1866; also that of John Bridge, M.R.C.V.S., Southport, who graduated in 1869.

Notes and News.

RABIES IN SOUTH AFRICA.—Mr. H. W. Carrington Wilmer, in a letter to the *Cape Argus*, says it appears to be the general impression, shared even by M. Pasteur, that Hydrophobia is unknown in South Africa. This, he says, is not the case. In 1887 the disease appeared among the many dogs owned by the Ovakwanyana Ovambo, a tribe of some 60,000 souls, south of the Cunene River, having been, according to the natives, introduced from the Portuguese province of Angola. The disease spread rapidly, and a bushman in the service of Mr. E. Sabbatta being bitten, died in fearful agony of most pronounced Rabies. Cattle and horses, including several belonging to the chief, and one owned by Mr. Albert Eriksson, were bitten, and all died of distinct Hydrophobia: the horses charging madly about, and in some cases even breaking their jaws by biting the trees. Eventually the Ovakwanyana destroyed every dog in the tribe. Nevertheless, the disease appeared in 1888, at Omaruru, in Northern Damaraland, and numerous cases occurred up to the time when he left the country, namely, in 1889. He adds, by way of caution, "As traders and hunters are constantly passing from Damaraland to Lake Ngami and the Transvaal, the appearance of the disease in those districts should be carefully watched for, as it is quite likely that it may eventually be introduced into the colony by dogs accompanying waggons from the infected regions."

MULES.—At a late meeting of the Bombay Natural History Society, Mr. Steel, of the Army Veterinary Department, read a very interesting paper on Mules, in the course of which he referred to the sources of supply. Mules, he said, come from very many parts of the world. In North and South America they are bred extensively, those of Kentucky, Minnesota, and Missouri being well known. The Mexican mules, resulting from the ass crossing with mustang mares, also have a good reputation. In Europe, France, Spain, and Italy are the main sources of supply, those derived from Poitou being specially fine; North and South Africa, Asia Minor, Cyprus, Syria, and Persia, also China, may be included in the list of places whence mules may be obtained. It is a significant fact that the best places for mules are those which are not renowned for good horses. Mule-breeding pays probably better than horse-breeding, for the progeny require less trouble in rearing, and are bought at a high price. Every mare suitable for horse-breeding, but told off to produce a mule, is a loss to the country, permanently for the former purpose, but only temporarily a gain for the latter. The mule is a working animal, and nothing more; the foal is a possible progenitor of future horses. So well is this understood in France, that the stud department there has had to adopt measures to repress the breeding of mules. Mr. Steel thinks that in India mules should be obtained, when possible, by importation. The French in Algeria found the mules very surefooted, strong of limb, hard of hoof (which does not, like that of the horse, dry up under the influence of heat), with step even and as long as that of the horse, a remarkable power of ascending and descending steep places, and of cleverly turning

sharp corners, sure on the worst of roads, quiet, easy to please as regards food, tolerant of heat and thirst, requiring drink less often and less in amount than the horse, more intelligent than is generally thought, and quite susceptible of attachments and amenable to good treatment. He is a model animal of transport. He can be ridden, driven, or used for pack purposes; his flesh is edible, and not unpleasant to the taste; he will carry small guns and sick men. He gives little trouble over shoeing, and may be left unshod, behind especially, for a long time without detriment. He is rather choice in his selection of water, and moist cold weather is unsuited to him. Though he exhibits a notable freedom from disease, he suffers severely from some specific affections. He works longer than the horse, but takes somewhat longer to mature. He inherits the sobriety, patience, endurance, and surefootedness of the ass, and the vigour, strength, and courage of the horse. Making allowance for size, he carries a weight one-third as large again as that of the horse; so he is essentially a pack animal. Somewhat of the unjust opprobrium which hangs in Western countries about his progenitor, the ass, still influences the popular views of the mule. In this age of utility, however, this is being steadily lived down, and anyone who has been on a campaign with a mixed transport of mules, camels, cattle, elephants, and carts will not hesitate to put in a good word for this interesting hybrid.

A Mysterious Disease.—According to a report from Mecklenburg, what is described as a most extraordinary disease has broken out amongst the horses in the village of Krisow, near Stavenhagen. The veterinary surgeons are unable to explain the nature of the disease, but have declared it non-infectious. Prof. Eggerling, of Berlin, who was summoned, was of the same opinion. At the same time about seventeen horses have died, one after another, and others are suffering from the disease. It is supposed to have been caused by the adulteration of the feeding stuffs.

The Cow of days gone by.—The old cow always gives milk except when she is dry; and she is dry about three-fourths of the time. She is, says an American writer, like the hens in Florida; they lay all the time they are not moulting, but they moult about ten months in the year. So with the scrub cow. She will eat the whole ears of corn at once, and is grossly insulted if you break them up for her. She will crawl through a barbed wire fence, and not switch her tail; she will jump over a ten-rail fence and not touch a rail; range through a pumpkin ground unconcerned; and break all the slats out of a picket fence until she can walk through. At milking time she may be found in the farther corner of the field. When she is milked, she will hold up her milk for half-an-hour, and when she does give it down it is the colour of the sky. She will give just about enough milk to keep her calf from starving, until it is old enough to turn on pasture. She will eat her head off twice a year, but you will hang to her because it is "Ole Brin' an' her gran' pap fit in the Revolution." Well, there is somewhat of a revolution going on now, and the first thing your old cow knows, she will find herself much in the condition of the Tory of revolutionary notoriety—she will find herself the despised of all nations. Besides that, the man who hangs on to her is pretty apt to find himself "in the soup," but she won't give milk enough to make it. The owner will be compelled to add water to thicken it.

The Veterinary Service in India.—The *Asian* for August 29th, referring to this subject, says:—"The editorial of the last issue of *The Quarterly Journal of Veterinary Science in India* takes up the question of the future Civil Veterinary Department in India. It says: 'The Civil Veterinary Department is to be on a military basis, in so far as it is to be recruited from the Army Veterinary Department, to constitute a reserve to the latter, on which calls may be made in war emergency, and, finally, to be connected with

the Army Veterinary Department by possibility of reversion and exchange of officers under some special conditions. These arrangements would, doubtless, tend to discipline, efficiency, and popularity, without in any way proving a burden to officers of either service. The possibility of reversion to Imperial Army Service is, indeed, a boon which was not open to the officers of the Indian Veterinary Department, and which will be appreciated as a valuable concession.' We cannot say we agree regarding the advisability of this concession, on which so much stress is laid. The special conditions would be a loop-hole for abuses, which, with time, would assuredly creep in. The arrangement might possibly tend towards increased discipline; it might be popular, particularly with those who might seek by interest to take an unfair advantage of it but we doubt that such an arrangement would promote efficiency. We think the two services should be as distinct as the Indian Medical Service and the Medical Staff, or as the Royal Engineers, who elect for Indian or Imperial Service. Experience has shown this sub-division to be necessary in the case of the Royal Engineers, and, *a fortiori*, is it advisable with the department in question. For the Civil Veterinary Department (we should substitute the word Indian for Civil) to be a really efficient body, it is necessary that its officers should have a knowledge of the language and special professional knowledge in directions that only a continued residence in the country and experience in its special lines of duty can ever afford. The advantage of the concession, as claimed by the veterinary journal in question, is an argument *ad hominem*, and not *ad judicium*. The officers of the new department would, of course, be available for active service in war emergencies, but otherwise their duties would be entirely civil. To say there are men who will not for any inducement whatever remain in India for continuous service is perhaps a truism, but one which does not, for all that, affect the question in the least. Let such men elect for Army Veterinary Service by all means; we do not think the Indian Veterinary Department would suffer by their loss. Recruits will be found for it as readily as for the Indian Medical Service or for the Staff Corps, and we do not for a moment believe that such men would necessarily be the ruck of the service. On the other hand, we fully admit that the Indian branch of the service must be made sufficiently attractive in salaries, pensions, and leave rules to counterbalance, or to more than counterbalance, the special attractions of the Army Veterinary Department, with its periods of home service and its social advantages of mess life and residence in large stations. It stands to reason that men will not give up these advantages for equal emoluments. The inducements to elect for the Indian branch would be parallel to those which men had to enter the Staff Corps. That such a department has long been called for is undisputed. It has become so common now for Government to waste time, energy, and money in deputing zealous and able professional men to report on, say, Cattle Disease in any particular district, and then to callously ignore and pigeon-hole their reports, that we have long since ceased to smile at it."

PARAFFIN OIL AS A CURE FOR PLEURO-PNEUMONIA.—Mr. William Dawson, who is now the manager of the Home Farm at Gordon Castle, Fochabers, arguing that as Pleuro-pneumonia was caused by a species of microbe infesting the lungs, and as paraffin oil was very effective in destroying minute pests on fruit bushes, it might also be equally effective in destroying the microbes in the lungs, which were the cause of Pleuro. How to get the paraffin oil "sprayed" over the lungs was a difficult matter, but he solved the difficulty, in a rough-and-ready manner, by putting a small sponge, saturated with the oil, into one nostril of the animal, and held the other nostril tight, and at every inspiration of the patient he gave the sponge a squeeze. The plan proved quite successful, and in every case, it is reported, the diseased animals so treated recovered.

ANTHRAX IN INDIA.—A severe outbreak of Anthrax has broken out in the Indian Viceroy's stables at Dehra Dun. Five or six horses have been attacked, and three have died, among them Lord William Beresford's well-known Arab pony, Shamshad.

TRICHINOUS PIGS IN GERMANY.—During 1888 trichinæ were found in 47 pigs at Nuremberg, in 8 at Hof, in 7 at Furth, in 4 at Erlangen, and in 1 at Ansbach. Between 1880 and 1887, 143 pigs were found to be suffering from Trichinosis at Nuremberg. In 1888-89, among a total of 479,124 pigs examined at Berlin, 342, or 1 in 1,400 were found to be infested with trichinæ.

COMPENSATORY HYPERTROPHY OF ORGANS.—Dr. Ribbert has tried to decide whether there is a compensatory hypertrophy of the sexual glands analagous to that of the muscles and the kidneys. In a paper read at the last meeting of the German physicians and scientists, he said he had used two or three young animals of the same age for each experiment. In one or other of these he removed one of the testicles, one of the ovaries, or several mammæ, and after a long time compared the remaining glands with the corresponding organs of control animals. He found that the testicles and mammæ left behind had invariably grown more considerably than in the normal animals. With regard to the ovaries, the conditions were not so clear. Dr. Ribbert, however, came to the conclusion that after the extirpation of one of the ovaries a considerably larger quantity of ova had developed in the other one. As to the experiments of Nothnagel, who denied the existence of a compensatory hypertrophy of the testicle, Dr. Ribbert believed that these experiments actually confirmed his assertion. Nothnagel found that the weights of the organs left behind did not exceed the highest weights of normal testicles. But, though this was correct, the average weights of these testicles exceeded the average weights of normal testicles by one-fifth in full-grown animals, and by one-third in young animals. Observations on man also favoured his view. In two men, aged about 40, with one testicle atrophied, the other gland was abnormally large. Histological examination showed that hyperplastic processes exclusively played a part in the enlargement of the organs. The increased growth of one of the sexual glands after removal of the other could not, of course, be explained in the same way as compensatory hypertrophy of the kidneys. It was probably due to the action of the nervous system, and this perhaps in such a manner that, owing to the want of the impressions which were conveyed from the removed organ to the centre, an effect was produced on the other gland.

INFLUENZA IN DENMARK.—It is reported that Influenza has appeared in Copenhagen, chiefly among the tramcar-horses, and in such a general form that one company has already had one-fourth of its stock attacked.

EFFECT OF CHEMICAL SUBSTANCES ON RABIC VIRUS.—There are as yet but few observations as to the effect of various chemical substances on the rabic poison. Two Italian observers, De Blasi and Travali (*Riforma Medica*, 1890, Nos. 19 and 20), have recently made a number of observations on this subject, directing their special attention to the relative value of the various agents—such as ammonia, nitrate of silver, etc.—most frequently employed in practice to counteract the effects of the rabic poison. The following was their method of experiment: When the agent employed was fluid or soluble, a piece of the virulent spinal cord of the animal dead from Rabies was placed for a certain time in it, well washed afterwards in distilled water, and then broken down into an emulsion and injected into the peritoneal cavity of two guinea-pigs. When the substance to be tested was insoluble, a certain quantity of it in the form of powder was shaken up with an emulsion of a fresh cord, which was then, after a certain time, similarly injected into guinea-

pigs. Their results show that the rabic poison is extremely sensitive to caustic and antiseptic substances. Creolin and citric acid were the most powerful in this respect, next in order of efficacy being solid nitrate of silver, sulphate of copper (10 per cent.), salicylic acid (5 per cent.), hydrochloric acid (5 per cent.), and perchloride of iron (2 per cent.). Other substances tried, including sulphate of zinc, permanganate of potash, iodoform, ammonia, sulphuric acid, camphor, boracic acid, proved less powerful.

RABIES IN MIDDLESEX.—Owing to the entire absence of Rabies in Middlesex during the quarter ended on September 30th last, the County Council have recommended the Board of Agriculture to withdraw the order, and have appointed a Committee to draw up regulations (in case the Board agree to their proposal) for the registration of all dogs in the county.

JEYES' DISINFECTANT.—Jeyes' Sanitary Compound Company have been awarded a silver medal at the Edinburgh Exhibition, for their disinfection of the buildings thereof. This is the fifty-fourth award of merit which the Company has received.

Correspondence.

VETERINARY EVIDENCE IN COURTS OF LAW.

SIR,—Recent occurrences have drawn the attention of the Veterinary profession to the kind of evidence given by members who are called upon as experts to assist in promoting the aims of justice; and it is well worth examining some of that evidence.

I dare not venture to insinuate that there is any truth in the remark I have heard made more than once with reference to law cases, to the effect that the evidence of some Veterinary Surgeons was merely a question of money, and that there were men who could be bought over to either side of a case at their own price; it was merely a case of the highest bidder. If this were true, it would indeed be a most serious state of affairs, and until I have absolute proof of the fact, I will not believe that any member of the Royal College could be guilty of such disgraceful and degrading conduct; as he would prove himself unworthy of a place in our Register. The conflicting Veterinary evidence given in courts of law is painful enough, in all conscience; but the difference in opinion should be charitably ascribed to honest convictions. To say that it is largely influenced by sordid claims, by mercenary considerations, would be a terrible indictment; and to assert that the evidence of an expert can be bought in favour of or against any particular case, according to the amount of the bribe offered, is revolting to anyone possessing a sense of honour, and a belief in justice. I do not believe in the cynical assertion of a great statesman, that every man has his price; for I believe that there are men whom no kind of bribe could buy.

But altogether apart from this question, there is another to which I now desire to refer, and that is Veterinary evidence in law courts when Veterinary Surgeons are being prosecuted. Several cases of this kind have occurred lately, and the last was recorded in the VETERINARY JOURNAL for last month. Mr. Leeney, M.R.C.V.S., of East Grinstead, was prosecuted by the Society for the Prevention of Cruelty to Animals, for cruelty to a horse in the performance of a surgical operation. From the evidence, it would appear that Mr. Leeney was entirely innocent of the charge preferred against him, and the case was dismissed. You, Sir, and other Veterinary Surgeons appeared in his defence, and appear to have been the means of rescuing him from what would have been ruin and disgrace to him had he been convicted. You, Sir, are a member of the prosecuting Society, and the only Veterinary wit-

ness against Mr. Leeney, Professor Pritchard, is also a member of that Society. Now, what I wish to know, and I am certain many more would like to know, is whether this prosecution was referred to either of you for your professional opinions before it was entered upon; or whether you were summoned to Court to give evidence without knowing anything of the facts. I ask this in the interests of the profession; for it seems to me that now-a-days no practitioner is safe from prosecutions for cruelty when pursuing his calling, however carefully and humanely he may act; and seeing that a man may be convicted on the evidence of a Veterinary expert, who may base his views on a hypothetical case, and not on the one before him, it is all the more necessary that we know what chance we have of escaping from such an awful danger, should we be so unfortunate as to be placed in the same alarming and humiliating position as Mr. Leeney. For it must be remembered that a conviction for cruelty to animals is far more damaging to a Veterinary Surgeon than to any other person, as he should be their special protector from pain and suffering.

I therefore appeal to you, Sir, for information as to whether you and Professor Pritchard had the case of Mr. Leeney referred to you before the prosecution was undertaken; as I cannot understand, if that was so, why your evidence was in Mr. Leeney's favour and Professor Pritchard's strongly in favour of his conviction. To me it appears a cruel and iniquitous case; and we ought to know all the facts relating to it. I therefore sincerely hope no scruples of false delicacy will deter you from obliging myself and others. Professor Pritchard not long ago appeared in defence of a knacker, who travelled a poor horse a mile-and-a-half without its foot, and did not kill it until the following morning. How does he reconcile his evidence in this and Mr. Leeney's case?

"AN ANXIOUS ENQUIRER."

[In reply to this correspondent, we may state that we knew nothing whatever about Mr. Leeney's case until two days before the trial, when we received a letter from him requesting us to go to East Grinstead and give evidence in his favour, as he was entirely innocent, and conviction would be ruin to him. Not until our arrival, shortly before the trial, were we aware of all the facts of the case, and that the proceedings were instituted by the Society mentioned above. From these facts we were convinced that Mr. Leeney was in no way to blame; and that to save him from peril, we were not only justified in giving evidence on his behalf, but that it was imperatively necessary to do so. Professor Pritchard arrived immediately before the trial, as the Veterinary witness for the Society, and we informed him of the facts as they were stated to us. As the representative of the Society, we urged him to keep the case out of Court, as it was likely to damage the Society and do injury to an innocent man. He said that the proceedings had been instituted on a case stated to him by the Secretary of the Society, and had he known as much of the case as he now knew, he would not have come to the trial. After consulting with the Society's solicitor, he informed us that the case must go on. To our intense surprise and pain, in the witness-box his evidence was entirely against Mr. Leeney. Fortunately, the case was dismissed, but it must have caused the defendant terrible anxiety and doubt while the trial was pending. It may be observed that, in consequence of this case, we have resigned our position on the Committee of the Society, a position we have held for a period approaching a quarter of a century.

It should be added that several communications have been forwarded to us on this subject, but publication of the above will suffice to explain their purport and our share in the matter. Mr. Leeney has our warmest sympathy, and, we are certain, that of every good member of the Veterinary profession. —ED. *V. J.*]

ANEURISM IN HOUNDS AND RACE HORSES.

SIR,—I would be greatly obliged if any of your readers could tell me of instances of Aneurism occurring in hounds or race horses. The well-known greyhound Master McGrath is said to have died of Aortic Aneurism. Was the specimen preserved, and if so, where? CHARLES B. BALLANCE, M.D.

56, Harley Street, Cavendish Square, London, *Oct. 4th.*

Aneurism in animals is very rare, compared with its frequency in mankind, and recorded instances of its occurrence in horses and dogs are extremely few. Aneurism of the anterior mesenteric artery in the horse and ass is by far the commonest form met with in animals, and this is due to the presence of the palisade worm (*Strongylus* or *Sclerostomum armatum*). According to Bollinger, from ninety to ninety-four per cent. of the horses in Dorpat suffer from this form of Aneurism. Aneurism of the iliac artery appears to be next in frequency, though it is far rarer than of the mesenteric. The relative frequency of Aneurism in different arteries in the horse is somewhat as follows: Great mesenteric artery (Worm Aneurism) 153, cœliac axis 4, hepatic artery 3, renal artery 3, posterior aorta 12. Race horses do not appear to be any more liable than other horses. With regard to hounds, it is true that Mr. Cripps stated, at a meeting of the Pathological Society, that he had seen Aneurism in these animals, and that Master McGrath had died from Aneurism of the aorta; but I can find no facts to support the statement. Dogs seem to enjoy special immunity from this condition. The much less frequency of Aneurism in animals is no doubt principally due to their quadrupedal position; and the frequency of Aneurism of the posterior aorta or its continuation in the horse is doubtless owing to the severe propulsive efforts made by the posterior limbs. If any of the readers of the Journal can furnish additional information to Dr. Ballance, I would beg of them to do so.—ED. *V. J.*

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. Mills, A.V.D., Chatham; W. Bryden, Boston, U.S.A.; R. W. Burke, A.V.D., Woolwich; W. Awde, Stockton-on-Tees; A. Burr, Boston; G. Morgan, Liverpool; F. C. Mahon, Cromer; J. Freeman, Hull; R. Ward, Baltimore; J. Moir, Armagh; A. W. Hill, London; J. N. Taylor, Utica, New York; C. B. Ballance, London; Professor McCall, Glasgow; S. Villar, Harrow; H. Thompson, Aspatria; "An Anxious Inquirer;" "Justice."

BOOKS AND PAMPHLETS: *Dr. Schutz*, Die Thierarztliche Hochschule zu Berlin; Johns Hopkins Hospital Bulletin; Procès Verbal de l'Académie Royale de Médecine de Belgique; Bulletin des Seances de la Société Nationale d'Agriculture de France; Johns Hopkins Hospital Reports; Horse-Owners' Handy Note Book; *Drs. Boschetti and Bassi*, Trattato di Ostetrica Veterinaria; *E. Frohner*, Lehrbuch der Toxikolcgie; *A. Vachetta*, Chirurgia Speciale degli animale domestici.

JOURNALS, ETC.: *Johns Hopkins Hospital Bulletin; Clinica Veterinaria; Annales de Médecine Véterinaire; Revue Véterinaire; Journal of Comparative Medicine and Veterinary Archives; Recueil de Med. Véterinaire; Wochenschrift für Thierheilkunde: Hufschmied; Echo Véterinaire; Journal of the Royal Agricultural Society of England; Archiv für Wissenschaftliche und Praktische Thierheilkunde; Modeno Zooiatro; Journal of Royal Agricultural Society of Victoria; Lancet; Edinburgh Medical Journal; British Medical Journal; Mark Lane Express; Live Stock Journal; Journal de Med. Veterinaire et de Zootechnie.*

NEWSPAPERS: *Sussex Daily News; East Grinstead Observer; Asia; Baltimore American; Eastern Counties Gazette; Scotsman; Freeman's Journal.*